

# SD Times

SOFTWARE DEVELOPMENT

The Industry Newspaper for Software Development Managers

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## ORACLE LAUNCHES NEW JAVA-BASED IDE FOR 9i AS

jDeveloper gets UML modeling tool, new JVM

BY ALAN ZEICHICK

Fresh from its launch of the Oracle9i AS application server, Oracle Corp. has unveiled the beta of a revamped set of Java development tools. The Oracle9i jDeveloper integrated development environment adds UML diagrams, a new JVM with integrated debugging hooks, and a pure Java implementation to the currently available jDeveloper 3.1 IDE, sold as part of Oracle's Developer Suite.

The jDeveloper IDE (<http://otn.oracle.com/products/jdev/content.html>) is available for download from Oracle's devel-

oper network Web site; the final version should be available by the end of the year, according to Claire Dessaux, principal product marketing manager for Oracle's application development tools and XML products, who commented that the designation "Oracle9i" is for the first time an integral part of the IDE's name. "We changed the name to brand 9i across the board" to go along with the app server and database, she said.

The most important change in 9i jDeveloper is that it's written in Java, according to Dessaux. "Before it was C++ and

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## Intel Unveils Compilers For Linux

Chip maker: New tools for Itanium outperform open-source compilers

BY EDWARD J. CORREIA

Intel Corp. has unveiled its first-ever compilers for Itanium systems running Linux, claiming that the new tools can produce applications that run as much as 40 percent faster than the same applications compiled by any of today's open-source compilers for Itanium.

Set to begin shipping in mid-September, the C++ Compiler for Linux 5.0 and FORTRAN Compiler for Linux 5.0 will offer many of the same features as their Windows-hosted counterparts, and will plug into the development tools currently in use by Linux developers, said Steven Speer, technical marketing manager at Intel's Solutions Enabling Group.

According to Speer, it was Intel's knowledge of the inner workings of its processors, particularly the 64-bit Itanium with its so-called EPIC parallel instruction technology, that enabled Intel to produce compilers that build applications that "show a substantial difference between the gcc compilers shipped as open source today... We have applications that have double-digit percentage gains, [one of which] shows on the order of a 40 percent performance gain by recompiling with the Intel compiler." (See "Is Itanium in Your Future?" page 27.)

Speer attributed most of the gains to Itanium's architecture.

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Intel's knowledge of Itanium enables better optimization, says Speer.

## Jacada Puts on a Happy Interface

Claims to offer first UI development, deployment kit

BY DAVID RUBINSTEIN

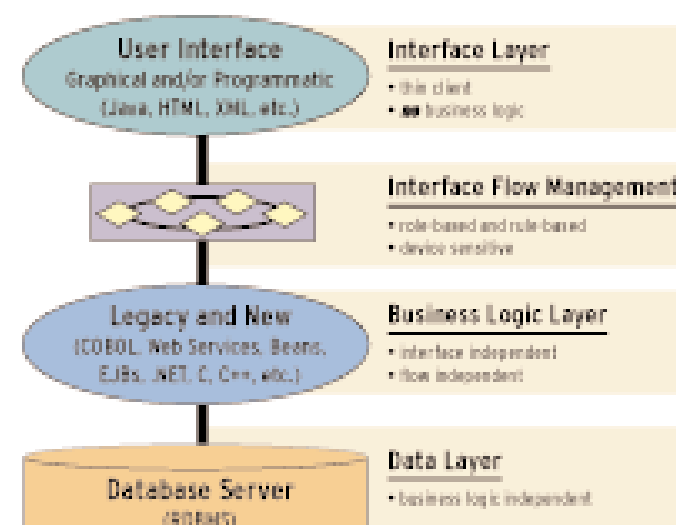
Offering what it claims is the first universal interface layer to insulate companies from changes in technology, Jacada Ltd. this week released the Jacada Interface Server, designed to allow developers to generate multiple GUIs from the same development tool.

"There have been no productivity advances in user interfaces. People are still hard-coding UIs that are application-specific," said Rob Morris, senior marketing director at Jacada ([www.jacada.com](http://www.jacada.com)).

Jacada, Morris said, offers a true separation of the interface from business logic, reducing development costs of retooling due to a new interface standard while providing a consistent look and feel throughout an enter-

prise. With the Jacada interface development kit, developers can create images or interfaces either as GUIs or as nongraphical front ends such as XML transactions and Java and COM

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Jacada separates presentation layer from business logic.

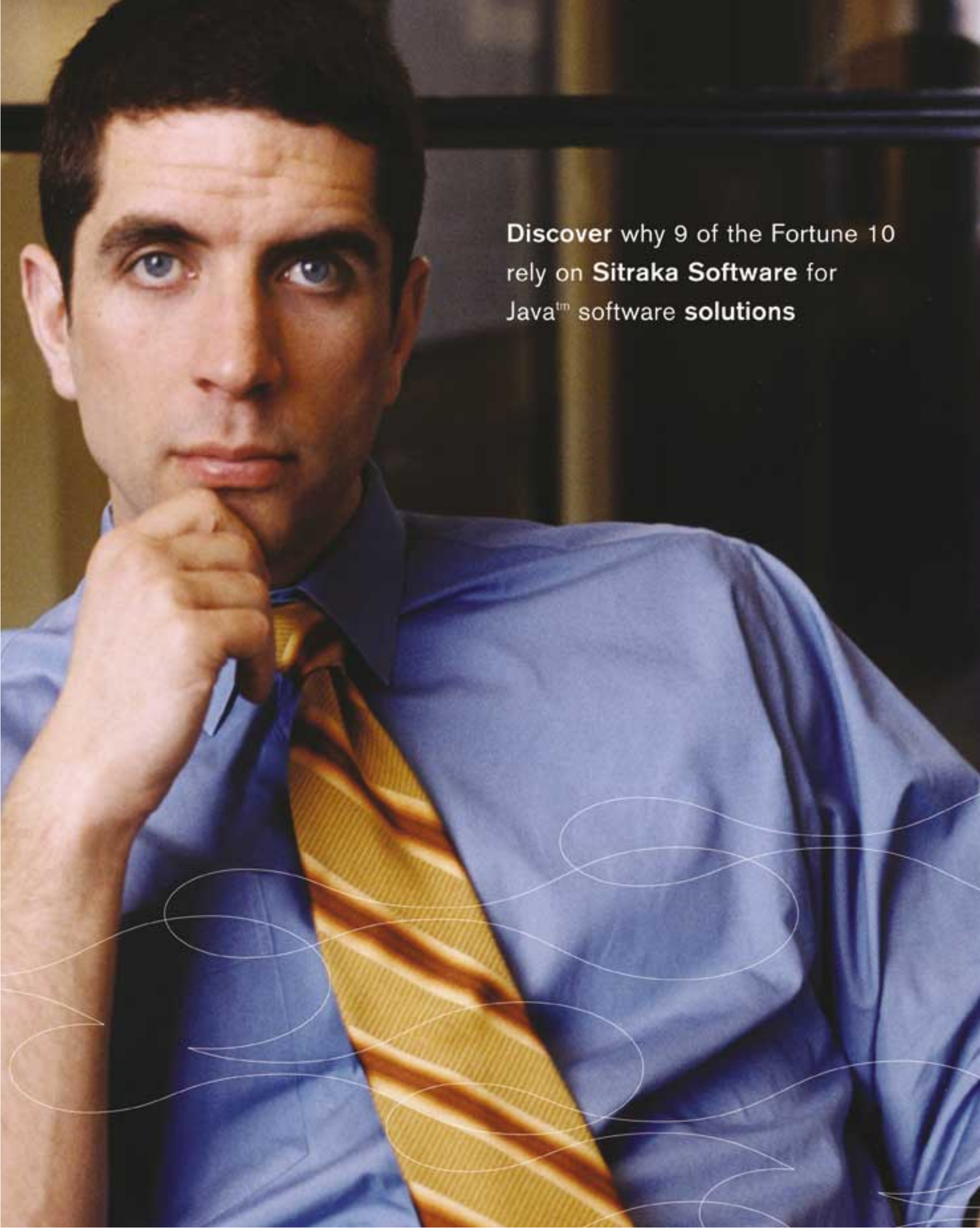
## BE INC. HANDS OFF TO PALM

BY EDWARD J. CORREIA

On the block since April, Be Inc. has found a buyer: Palm Inc. In an all-stock transaction valued at \$11 million, Palm will acquire all of Be's software assets and intellectual property, including BeOS, its Unix-based computer and appliance operating system that failed to attain wide adoption. The deal is expected to conclude before year's end, subject to the approval of Be stockholders.

According to Palm spokesperson Marlene Somsak, BeOS will not replace Palm OS but will be incorporated into future versions. "We're sticking with Palm OS. We plan to use specific Be technologies in the base [Palm] OS, like multi-

► continued on page 5



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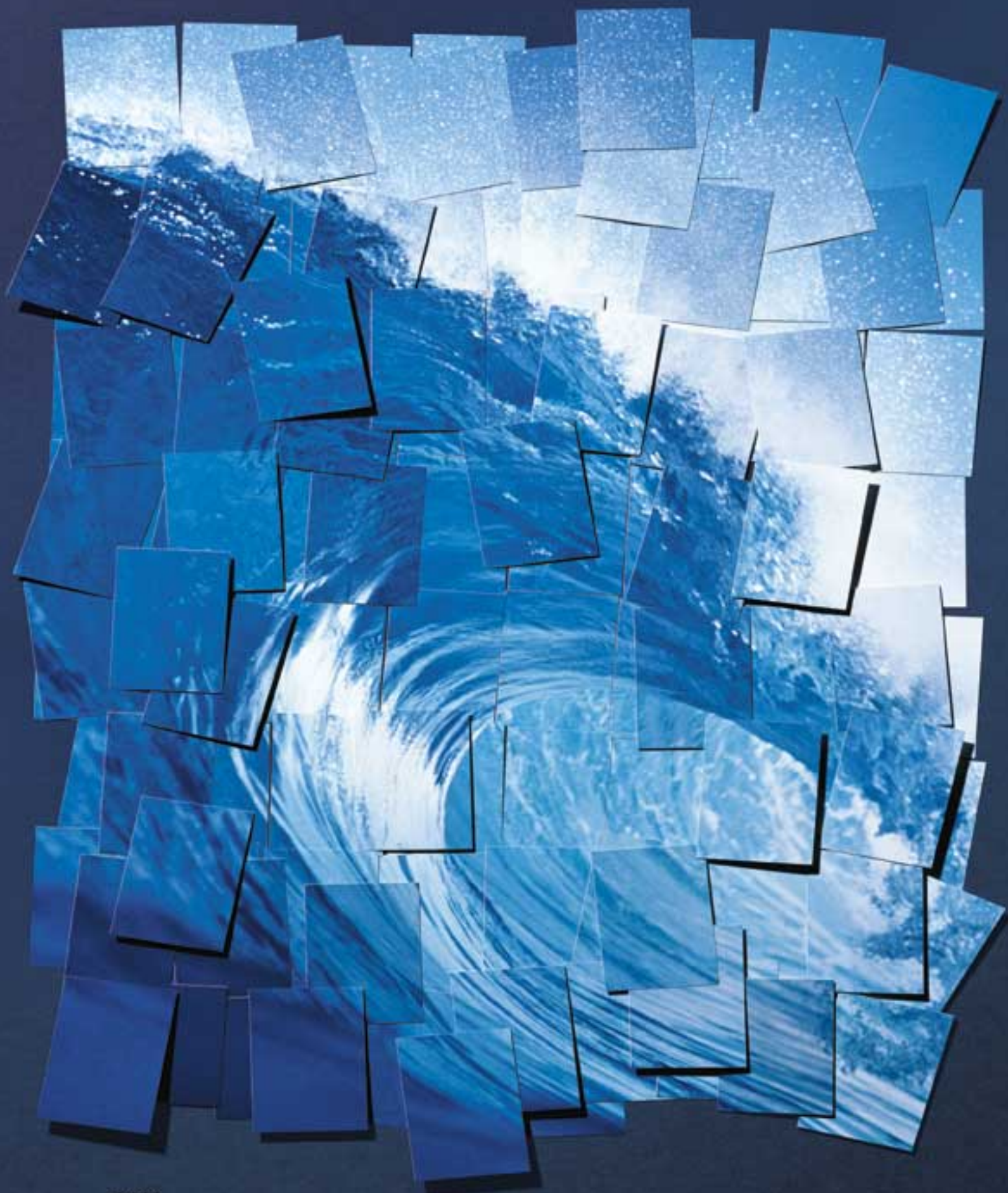
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# SpiritSoft Revamps JMS Management System

Sequence-oriented SpiritIntellect 3.0 supports custom rule editors, multithreaded messages

BY ALAN ZEICHICK

Want to use business rules to control transactions based on Java Message Service? If so, SpiritSoft claims that its newly updated SpiritIntellect event management system, which shipped in late August, has the right features for the job, capable of watching for the specific conditions and message sequences, and then carrying out actions whenever those rules are met.

"Intellect allows you to manage business



Rules can be changed on-the-fly, says SpiritSoft's Ross-Talbot.

rules," said Steve Ross-Talbot, SpiritSoft's (www.spirit-soft.com) CTO. "If there are a lot of events going back and forth, it's not easy to consolidate those events into a single business transaction." He said, for example, that it might take many separate JMS events to create a transaction, such as a stock trade. By setting up rules in Intellect, developers could track full transactions, instead of individual messages. They can also note when

exceptions occurred, such as when full transaction sequence was not completed.

Ross-Talbot contrasted SpiritIntellect's rules-based engine with traditional expert systems. "Other rule-based systems are goal-oriented, not sequence-oriented. This is about events, not facts in a knowledge base." SpiritIntellect uses what the company calls Event Condition Action (ECA) rules to define conditions and sequences. After the rules are defined in an editor, the SpiritIntellect server translates those rules into Java, said Ross-Talbot, which then

can be remotely executed on any JVM-equipped platform.

The latest version, SpiritIntellect 3.0, uncouples SpiritSoft's included ECA rule modeler/editor from the rest of the product, so that third-party vendors or enterprise developers can create their own modeling tools and rules editors. The included ECA rules editor also has been enhanced, Ross-Talbot said, with a new Template Editor designed to make it easier for developers to create customer rules-making interfaces for nondevelopers to use. Ross-Talbot indicated that developers often use SpiritSoft's

editor for in-house use, but prepare simpler, specialized rules-management interfaces for consumers or for specific devices.

The new version also includes the ability to modify rules on-the-fly, without having to interrupt or restart services, according to Ross-Talbot, and has improved change control, version management and distributed deployment features. The software also can generate multithreaded Java code from the ECA rules.

Pricing information on SpiritIntellect 3.0 was not available at press time. ■

## SoftWire.NET Enters Beta

Graphical programming tool set for November release

BY EDWARD J. CORREIA

SoftWire Technology Inc. has released to beta SoftWire.NET, an add-on for Microsoft Corp.'s forthcoming Visual Studio.NET development environment that the company claims will permit nonprogrammers to generate fully functional applications without writing code. SoftWire is set to release the new tools in November, to coincide with the scheduled release of Visual Studio.NET.

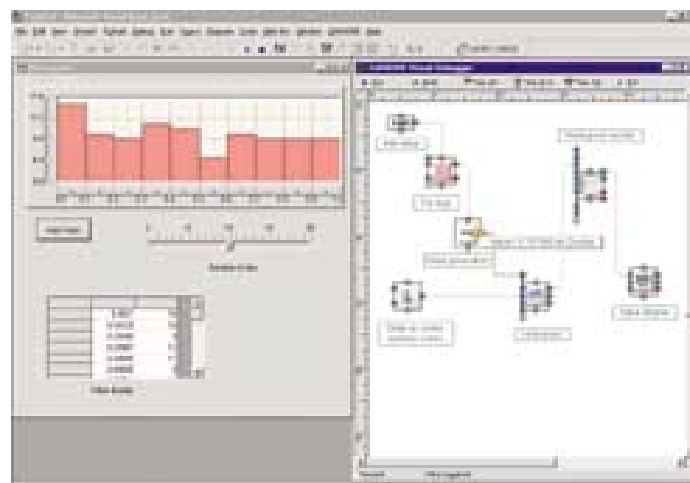
The company in July released SoftWire 3.0, an add-on for Visual Basic 6.0 that provides visual debugging, the ability to add real-time Web-sourced data to

applications, and other enhancements to the integrated development environment. According to the company, the new version will offer similar capabilities for the full Visual Studio.NET suite, and will create royalty-free applications that execute under Microsoft's Common Language Runtime.

Although targeted mainly at nontechnical staff, SoftWire also can be useful for highly skilled developers, said SoftWire spokesman Andrew White. "Experienced programmers can quickly generate and deploy prototype applications, or can push some of their workload to

inexperienced developers without tying up the IT staff with support problems." White said that the environment integrates with Microsoft tools by taking advantage of Microsoft's ActiveX Designer and ActiveX controls architectures, and that code can be added manually to applications if required.

According to White, SoftWire.NET can provide further benefits to Visual Basic developers that are planning to migrate to Visual Studio.NET. He claimed that because their Visual Basic programs will not be backward compatible, "if they're going from [Visual Basic



By using wires to connect inputs and outputs of objects, nontechnical people will be able to create working .NET programs.

6.0] to Visual Studio.NET, they will have to recreate their programs. SoftWire will help them bypass the learning curve." The beta version of SoftWire.NET,

which works with Visual Studio.NET beta 2, is available now for download at [www.softwiretechnology.com/dot-net/default.html](http://www.softwiretechnology.com/dot-net/default.html). ■

## SILVERSTREAM INTRODUCES JBROKER WEB

BY CHRISTINA M. PURPI

SilverStream Software Inc. has announced the availability of its newest product, jBroker Web 1.0, a portable Web services server and a set of tools designed to create Web services using Java Remote Method

Invocation. In addition, SilverStream has shipped an upgrade to its J2EE application server.

jBroker Web, which the company calls a J2EE-compliant runtime, is not tied to SilverStream's application server. SilverStream said that

it also can run on BEA's WebLogic, IBM's WebSphere or Oracle's 9i AS.

jBroker Web includes a server and a set of three compilers so Web services created in SilverStream's eXtend Workbench development environment can

be deployed onto the J2EE app servers. These compilers convert WSDL to Java and vice versa, and also generate client and server XML Remote Procedure Call glue code, according to the company.

What is unique about jBroker Web, explained product manager Misha Davidson, is that "it has the ability to generate a Web service from any Java class, including EJBs," and can also generate a Java client that can access a Web service from a WSDL file. jBroker also includes a SOAP 1.1 runtime and is interoperable with several SOAP implementations, including those from Apache and Microsoft, said Davidson.

Last month SilverStream also shipped its Application Server 3.7.3, which includes

jBroker Web and the eXtend Workbench. jBroker Web can be downloaded for free from the company's Web site, at [www.silverstream.com](http://www.silverstream.com). The app server is priced at \$500 for the developer version; the deployment version carries a \$15,000 per-processor price tag.

The eXtend Workbench is an integrated development environment designed to help developers create Web services; the company claims that it streamlines J2EE and Web services development with recently added support for SOAP, UDDI, WSDL and XML. Applications developed with the workbench can run not only on SilverStream's app server, but also on WebLogic, WebSphere, Apache TomCat and others. ■

## BE OS BOUGHT

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media, development tools and Internet capabilities."

And although BeOS is capable of more, Somsak said Palm does not intend to enter the desktop or Internet appliance markets. "We want to continue to focus on handhelds, wireless mobile devices and communica-

tors," and will use technologies in BeOS to help it continue to compete with Microsoft's Windows CE operating system. "We're one of the few companies that has held its own against Microsoft. So we're beefing up our OS in lots of ways that will allow it to do more and better things, but we're not ready to share those publicly." Somsak added that Palm is unsure if it

will use the BeOS kernel.

Palm (www.palm.com) has offered jobs to most of Be's engineering staff and has retained the services of Be founder and former Apple visionary Jean-Louis Gasee to help integrate his former staff and technologies with Palm's own. Be will retain its cash and equivalents, and will begin winding down its operations after the closing. ■



# iPlanet Pulls Integration, Messaging Into Its Orbit

Offers integration servers for EAI, B-to-B that include new JMS middleware

BY DAVID RUBINSTEIN

Looking to bring disparate products under a single branding and architectural umbrella,

iPlanet—the joint venture between Sun Microsystems Inc. and AOL Inc.—this week released an integration suite

that includes the iPlanet Message Queue middleware released at JavaOne in June.

The new suite combines

iPlanet's Integration Server EAI Edition and a B-to-B edition with the JMS middleware to provide a solution that "spans a range of

sophistication depending upon needs," said Sanjay Saranthy, iPlanet's director of product marketing for application and integration services (www.iplanet.com). "The dynamics of the market have changed. Integration isn't a stand-alone part of the infrastructure. It must be looked at in terms of development and delivery."

The EAI Edition, due out this week, is built on an XML backbone, enabling message transport from one application to another via JMS or HTTP, Saranthy said. An XSLT transformation tool allows the information to be shared based on schemas automatically loaded into the tool, he explained. The EAI Edition also supports SOAP and provides LDAP integration, and can run on OS/390 to allow IBM's CICS and other main-frame applications to be used in the creation of new J2EE apps or Web services, he said.

The B2B Edition, expected to ship by the end of the month, supports a new AS2 protocol that iPlanet helped standardize, which Saranthy described as "an HTTP version of encrypted e-mail." Support for multiple communications protocols exists in the B2B Edition, as Saranthy explained that organizations with multiple trading partners require multiple protocols.

The B2B Edition, which comes bundled with Message Queue to provide JMS support, is a combination of Netscape's EC Xpert and Trading Xpert servers, which have been on the market for about three-and-a-half years, Saranthy said. The EAI Edition also is bundled with the messaging middleware; Message Queue can be purchased separately.

Saranthy cited iPlanet's commitment to standards as a differentiator in the crowded message-oriented middleware and EAI spaces, and added that iPlanet's application and integration servers help complete an overall business infrastructure. "People don't want to have to administer separate EAI and development spaces," he said. "The world of integration is starting to merge with the application development world. When you build an application today, you're integrating with something." ■

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# Quartet Change Manager Controls Dependencies

BY DOUGLAS FINLAY

SCM Labs Inc. has released Quartet 1.1, an updated Java-based software configuration management program that can track software component and tool dependencies as well as attachments, and has the ability to generate and receive event notifications.

"Version 1.1 allows every object in the system, such as revisions or files, to have attachments, so that every object can be annotated," said Scott Lehman, CEO of SCM Labs (www.scmlabs.com). "Because everything in the system creates events, users can subscribe to notifications of these events as they happen in the system, so they can get as much or as little information as they wish about the system," he continued.

The Quartet software configuration management system is an outgrowth of the company's proprietary CMS com-

mand-line management tool set, said Lehman, that was installed on top of many software configuration management vendors' tools when the company was an SCM consulting company for seven years prior to the release of Quartet. "Our tool set provided more functionality for customers than was offered from the vendor tools they used," Lehman said. He said the company redeveloped the CMS tools for more than two years, adding a graphical interface, and renaming it Quartet.

Quartet is based on what Lehman calls an SCM methodology comprising version control, build control, change control and dependency control. "While Perforce has a standalone version-control tool, and Rational has a complete suite of tools that address these control disciplines, none has the dependency control," Lehman

said. "Dependency control," he continued, "is about managing the dependencies between independent, discrete releases that are managed in the SCM system, so that you can know what release of what software works with releases of other software in a real-world environment."

Lehman claimed that the ability to understand dependencies has been missing in SCM until now. "Downstream, in six months or even two years from now, if developers find features in a program that they like and want to use, when using Quartet they will learn instantly what else is required to make the program run," he said.

Lehman said that future versions of Quartet will integrate with WebDAV servers, and run in an Enterprise Java-Bean environment.

Available now, 1.1 costs \$999 per developer seat. ■

## XML to RDB a Direct Hit With Mapping Tool

BY DAVID RUBINSTEIN

There's a hit out on relational databases.

Hit Software Inc. this week has added a graphical mapping utility to its Allora XML-to-SQL translation server. The new utility provides an easier way for developers to define the relationships between XML tags and database columns, according to the company.

Prior to adding the mapping tool, Allora brought data out from the back-end data store

according to a fixed schema, and developers had to use an XSL editor to manually transform the data to the desired format, according to Martin Smith, Hit's vice president of sales and marketing.

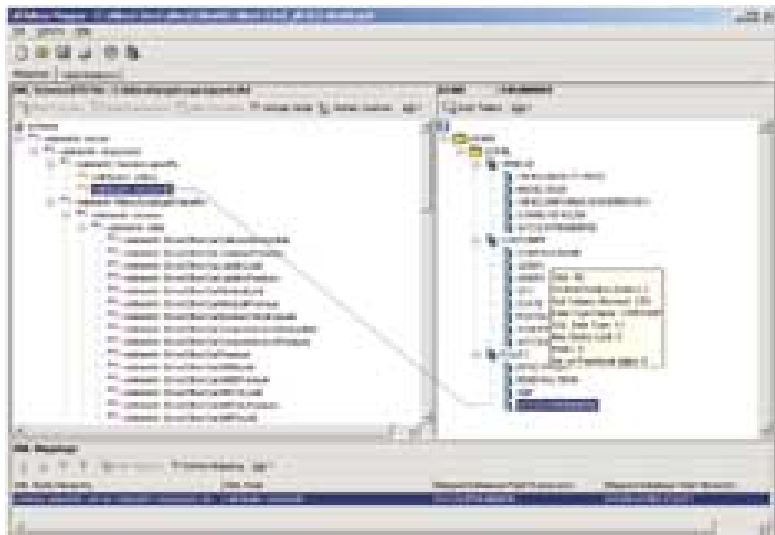
Allora 2.0 now allows the mapping to be saved as an XML document that is provided as a parameter to its runtime engine when the middleware is called, Smith said. Data binding classes wrap access to the relational data-

base, allowing Java or Windows code to be generated to access the data as XML. Tagging of the data is left to the application, so the data is provided as per the DTD or schema the application requires, Smith explained.

Allora, which the company says conforms to the SQL, XML DOM and SAX standards, sells for \$2,995 per single developer workstation license and is available as jAllora for Java and winAllora for Windows. It runs on Windows and Java servers using JDK 1.2 and above.

"We wanted to provide XML developers access to relational databases as if they were XML documents," Smith said. "This keeps them in the same XML paradigm without having to change the back-end server environment."

Hit Software (www.hitsw.com), in business since 1994, began developing SQL middleware for IBM's DB2 and moved into XML three years ago, Smith said. ■



Allora XML-to-SQL translation server provides a visual reference for defining relationships between XML tags and database columns.

## News Briefs

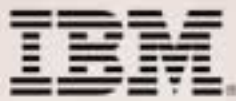
### COMPANIES

**TechExcel Inc.** now offers a module that integrates its DevTrack 4.2 bug- and issue-tracking software with **Perforce Software Inc.**'s software configuration management system. The module will become a standard feature in DevTrack to offer developers tracking and management of issues and code changes, so updates within Perforce can be seen in DevTrack, and vice versa . . . **Siroyan Ltd.**, which makes scalable integrated processor technology, has signed an agreement with **OnCore Systems Corp.** to bundle the OnCore embedded real-time operating system, development tools and production licenses with Siroyan's SIP3 scalable integrated processor architecture . . . **Protel International Ltd.**, which develops and markets electronic design automation software for Windows under brand names Accolade, CAMtastic, CircuitMaker, Protel, Tasking and others, has changed its name to **Altium Ltd.** . . . A license agreement between **Lineo Inc.** and **FSMLabs Inc.** gives Lineo the right to distribute and market FSM-Labs' dual kernel real-time technology within Lineo's Embedix embedded operating system and other Lineo products.

### PRODUCTS

Swedish company Jennsoft has upgraded its **CodeCompanion** source-code analysis tool with more rules and new user and batch-mode interfaces. CodeCompanion ensures that code conforms to formatting and style rules to make the code easier to understand, maintain and debug . . . Cape Clear Software Inc.'s **CapeConnect** Web services platform now runs on the **iPlanet Application Server** . . . Oak Grove Systems Inc. has made its **Reactor 5.0** XML-driven workflow engine compatible with BEA Systems Inc.'s **WebLogic** application server. The workflow engine provides for the rapid development of process layers within enterprise Java applications, the company claims . . . For a limited-time \$75 price, Documentum Inc. is offering a Rapid Deploy package for its **4i Web Content Management Edition**. The single-site WCM package has a predefined set of products, integrations, training and maintenance bundled to streamline and quicken Web site content development, according to the company. The \$75 price is good until Sept. 30 . . . Seapine Software Inc.'s **TestTrack Pro 4**, which now integrates with Microsoft Corp.'s **Visual SourceSafe** and other source-control programs, can define field relationships, enabling developers to describe defects and link them to the code changes that correct the defects, the company says . . . Sun Microsystems Inc. has released a minor update to its flagship operating system, **Solaris 8 OE 07/01**, according to the company, includes improved features for performing live updates of applications and installing patches, has improved scalability for its DHCP server, and offers better Web server caching . . . Pervasive Software Inc. has released a Linux version of its **Pervasive SQL 2000i** embedded Web database server, which supports version 2.2 and higher of the Linux kernel . . . Citrix Systems Inc. has made its **MetaFrame XP** application management software and **Extranet** software interoperable with Entrust Inc.'s **Intelligence 6.0** and **Authority 6.0** digital signature software, which will permit rollout of Entrust's security applications on a mass scale while providing users of MetaFrame XP and Extranet with security and privacy in creating digital signatures . . . Microsoft Corp. has shipped its **Content Management Server 2001**, which the company claims reduces the time required to bring Web applications to market. Pricing is \$39,901 per server for the full-featured Enterprise Edition; the Evaluation Edition is available for trial by downloading from [www.microsoft.com/cmserver/evaluation/trial.htm](http://www.microsoft.com/cmserver/evaluation/trial.htm). A Developer Edition will ship in October . . . Embedded Java developer esmertec inc. has integrated its **Jbed** Java-based RTOS with **mBedded Server**, an OSGi-compliant remote device management system from ProSyst Software AG. The combined products will run on development boards from Amtel, Embedded Planet and Intel . . . IDAutomation.com Inc. has updated its **Java Barcode Packages** to include servlets and applets for creation of bar codes from Web applications, allowing for automation of several business processes. Common uses, according to the company, include online registration forms, coupons, e-commerce receipts, packing slips and invoices. All popular bar-code types are supported, the company says. A free demonstration of the product is ▶ continued on page 37






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# XMLCities Converts Documents to XML

BY DOUGLAS FINLAY

XMLCities Inc. has released the first beta of its XML Capture Suite, a set of tools designed to help XML developers in production environments convert large numbers of paper documents

and digital images into XML.

The suite includes XDTD Editor, XML Pattern, PageGenie XML, XML Proofer and XML Genie Controller modules, according to Evan Huang, XMLCities' (www.xmlcities.com)

president and CTO. He said the suite prepares documents for tagging, and then tags the documents automatically into XML.

Huang said paper documents must first be converted into the company's proprietary Page-

Genie Metafiles (PMF) format using the company's stand-alone PageGenie Enterprise documents capture program, while digital documents must be converted into Adobe's Portable Documents Format (PDF) by

using Adobe's Acrobat software, not included in the suite, before they can be converted to XML by the suite's PageGenie XML application. Developers use the XDTD Editor to create Document Type Definitions (DTDs) for the documents, which are then pulled into the PageGenie XML module to be matched with the PMF and PDF documents for tagging. "If developers want to define what pattern rules will be added to large amounts of documents, they can create those patterns in the XML Pattern module, which will then be pulled into the PageGenie XML as well for use when tagging the files," Huang said.

Huang said PageGenie XML tags most, but not all, of the document automatically. "There may be things on the document the XDTD Editor or XML Pattern couldn't write rules for," he said, adding that in that case, the developers must manually insert XML tags, using the XDTD Editor's graphical interface.

An XML Proofer module acts as the quality-assurance module to check that all DTDs and pattern rules were applied as written.

General availability is expected in early 2002. Pricing has not yet been established. ■

## TROLLTECH SENDS QT/MAC TO BETA

BY CHRISTINA M. PURPI

Macintosh developers will now have the ability to use Trolltech AS's Qt cross-platform C++ graphical user interface development framework, as the company has released into beta its Qt for the Mac OS X operating system.

Qt's object-oriented framework simplifies the task of writing and maintaining GUI applications, according to the company. With the release of the Macintosh version, developers can target their applications at all of the major operating systems with a single C++ source tree and port to those environments with a simple recompile, said CEO Havaard Nord in a statement.

The beta is available from the Trolltech Web site (www.trolltech.com) in the form of a time-limited binary. The final release will be available in October, according to the company, with pricing similar to that of the current Qt/Windows. ■

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# IBM Pushes Linux, WebSphere, WebSphere, WebSphere

BY ALAN ZEICHICK

SAN FRANCISCO — At IBM Corp.'s Solutions Developer Conference, held in mid-August, the company announced to the 3,500 attendees several new and

updated products, covering new Linux and WebSphere tools, plus changes to its VisualAge for Java development environment.

Linux was a major theme of the conference, with two of

three opening keynotes—one from Irving Wladawsky-Berger, IBM's vice president of technology and strategy, the other from Jon "maddog" Hall, executive director of Linux International—

heavily emphasizing the virtues of Linux and open-source software. Even the opening keynote by Steve Mills, senior vice president for IBM's software group, touched on Linux's strate-

gic importance for IBM.

At the show, IBM launched a new Software Evaluation Kit for Linux, which includes development licenses for WebSphere, DB2, Lotus Domino Server, MQSeries and VisualAge for Java, according to Scott Handy, IBM's director of Linux solutions marketing. The kit runs on Linux distributions from Caldera, Red Hat, SuSE and TurboLinux, and can be ordered at no charge from [www.ibm.com/linux](http://www.ibm.com/linux).

Also for Linux, IBM released a beta version of WebSphere Studio Workbench, an integrated development framework that supports developer tools as plug-ins. There are already versions of VisualAge that plug into the Workbench, said Handy, and 12 third-party developers are working on plug-ins as well.

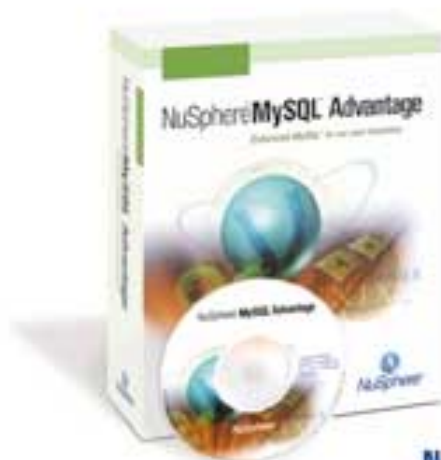
For Windows, a new open-source tool, to be called WebSphere Studio Application Developer, which is newly available in beta, is being described as the replacement product for VisualAge for Java. At the Solutions conference, IBM announced general availability of VisualAge for Java 4.0 for Windows, which now conforms to the JDK 1.2.2 and EJB 1.1 specifications; JDK 1.3 support will have to wait for WebSphere Studio Application Developer to be completed, according to the product's FAQ. IBM says that VisualAge will be supported in its current form at least through July 2003.

IBM also announced general availability of its WebSphere Studio 4 for Windows, a Web development suite the company describes as the first set of commercial tools for building and maintaining Web services and JSPs for the WebSphere application server. Also for WebSphere, IBM has released a free framework for companies to build private UDDI registries; it can be downloaded from [www.ibm.com/websphere/developer/downloads](http://www.ibm.com/websphere/developer/downloads), under "technology previews."

IBM's message is clearly that WebSphere is the company's strategic application development platform. In fact, next year's Solutions conference will be merged with the currently stand-alone WebSphere developer conference into a single event, tentatively scheduled for next May in San Francisco, said Gina Poole, IBM's director of developer marketing. ■



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## ORACLE

&lt; continued from page 1

other languages. It's not a port to the platforms it runs on, but the same source code on all platforms," she said, adding that the IDE runs on Linux, Solaris and Windows clients, or on any client with a Java Virtual Machine.

The focus of the new development environment, according to Dessaux, was on providing a single interface for performing the most common tasks facing developers. "What we've been hearing from J2EE developers is that they like J2EE, but that programming requires too many low-level

APIs," she said. Thus, the new jDeveloper's emphasis is on covering the entire development life cycle of J2EE applications, from modeling to coding, then tuning and debugging.

New to jDeveloper is an integrated UML modeler, developed by Oracle, Dessaux said, that incorporates class

and activity diagrams into the IDE. "It doesn't support the full list of models like Rational [Rose]," she said, "because we know that most Java developers won't use them all." However, Oracle is working on use case and data model diagrams, as well as the ability to model Web services within UML

inside the IDE. "That should be ready roughly one year from now," said Dessaux, who added that jDeveloper offers three-way synchronization of code, compared with two-way by competing UML tools. "We allow synchronization between the [UML] model, code and properties palette for the objects," she said, noting that changes made to any of the three locations will be reflected in the other two.

Another major change to jDeveloper, according to Dessaux, is in its debugging capabilities. She said that many developers don't use debuggers because the instrumentation slows down execution too much—to as little as 30 percent or 40 percent of normal speed. By comparison, she claimed that the custom JVM included in the jDeveloper environment runs and debugs code at about 80 percent of normal speed.

Dessaux also said that the new jDeveloper includes APIs for extensibility, comparable to Microsoft's Visual Studio or Sun's Forte IDEs. She said that Oracle is developing a report-generator add-in to jDeveloper that will be in beta by early September. Motorola, she said, has created a J2ME wireless device simulator add-in for jDeveloper, so that programmers using Oracle9i AS can simulate tests within the IDE; Nokia is working on building a simulator add-in, she added.

The updated IDE also includes what Dessaux called "one-click" deployment of J2EE applications, including all jar files and packages, to Oracle9i AS, but she insisted that jDeveloper isn't only for Oracle app-server customers. Deployment on BEA's WebLogic is supported in this beta, and WebSphere will be coming soon, she said, although neither will have one-click capability.

The final new features, she said, include XML tools, such as an XML schema editor, parser, and code to generate XML from a SQL query.

The jDeveloper IDE, when it's completed, won't be sold separately, but only as part of Oracle's full \$5,000 per-seat Developer Suite, which also includes a forms generator, report generator, HTML designer, software configuration management system, XML development tools, business intelligence tools and a data warehouse/data mart design tool. ■

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## JACADA

◀ continued from page 1

APIs, he said. The kit can read either green-screen source code from legacy applications or data schemas from new applications, and generate Java, HTML, Visual Basic or XML code, depending upon the developer's need.

Controlling the interface generation is the Jacada KnowledgeBase, a rules-based repository in which organizations can store definitions for such things as push buttons, drop boxes and shipping labels for recall from a palette list during the creation of new interfaces, Morris said. KnowledgeBase also keeps links of where these definitions were used, so that if changes need to be made to the rules repository, they can be immediately de-

played out to the interfaces using those features, saving developers the time of having to update each screen individually, he explained. "Interface technology standards have changed 15 times in the last 20 years," Morris said, "so companies don't add value to the business by having to retool and redeploy inter-

faces. It's a drain on their assets, and multiple nonintegrated UIs linger in their systems, allowing for little reuse of applications."

When organizations need to link existing applications with such prepackaged customer relationship management solutions from Siebel or Clarify, the Interface Server kit can be used

to modify the look and feel of the existing applications to match up with the prepackaged interfaces, Morris said.

Support for new applications written in Java, COBOL and RPG will be added in a release due out in the fourth quarter of this year, Morris said, while support for Web services, .NET

and the J2EE specification is expected to be available by the middle of next year. The Jacada Interface Server runs on Solaris and Windows NT, as well as OS/390 and OS/400 mainframe systems, Morris said. Pricing is \$5,000 for a developer kit, and \$30,000 per server for deployment, he added. ■

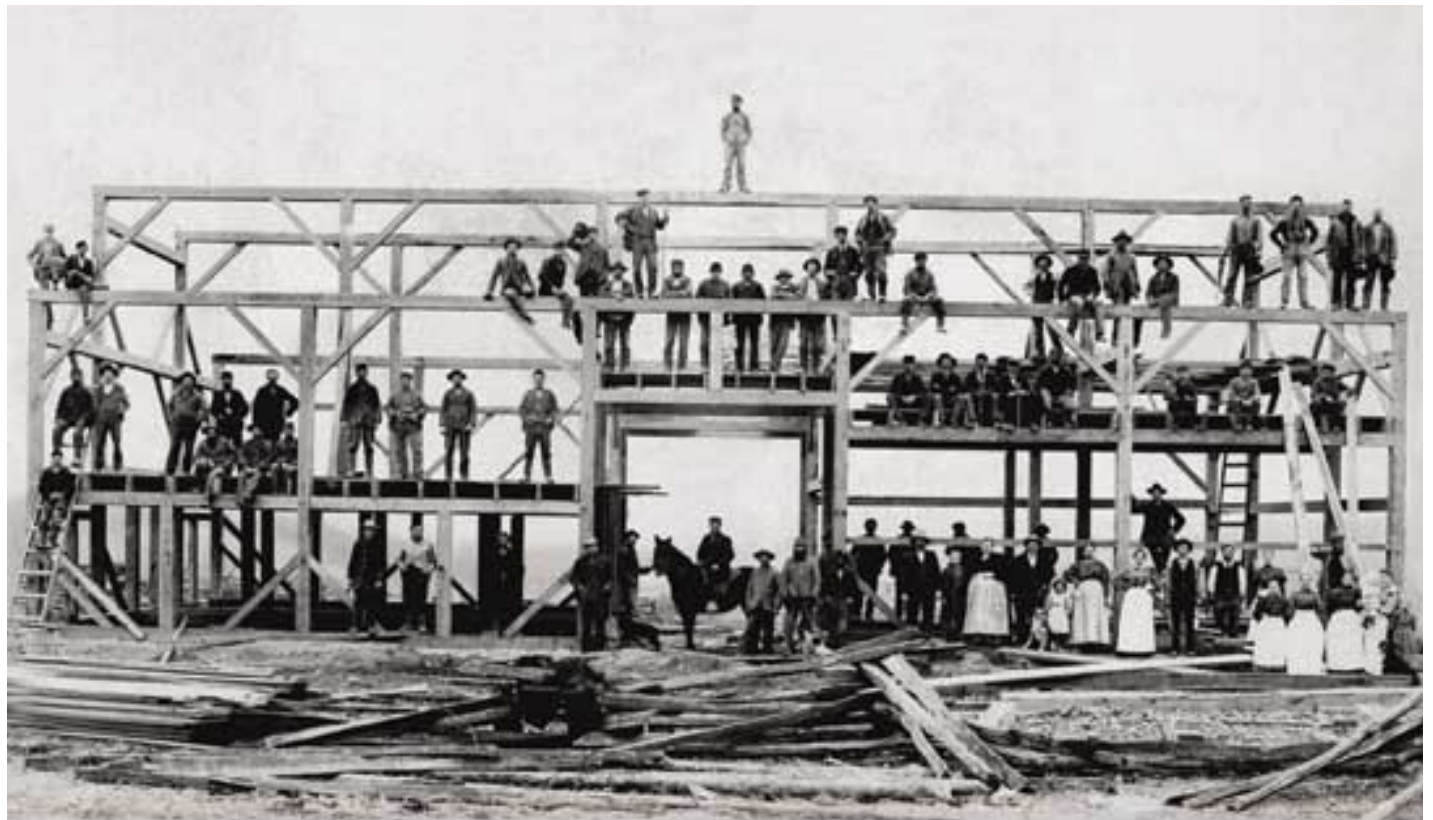
## INTEL

◀ continued from page 1

"We get similar performance gains between Itanium and Pentium 4," he said, adding that the "advanced compiler optimization technology, like that in the Windows versions," also comes into play. "The compilers are largely the same between Windows and Linux. They have the same front end and the same optimizing technology in the back end." Both compilers are compatible with Itanium and Pentium 4 processors.

Although these are Intel's first compilers for Linux, Chuck Piper, Intel's product marketing manager for compilers, said that because of the commonality of functions between the Windows and Linux versions, the new products will start at version 5. "We wanted to keep them rev-locked. We also think it sends a message that there's a lot of mature technology in these compilers."

According to Speer, the new compilers, priced at \$399 for download or \$499 on CD-ROM, have been validated for use on Red Hat Linux 6.1 or 7.1 development hosts. For other distributions, Intel provides platform notes. "We will provide installation instructions for any other Linux distribution that is based on a similar kernel and glibc [Linux libraries] release that the Red Hat distributions are based on," he said, adding that it is reasonable to expect the compilers to work properly in such environments. Trial versions can be downloaded from [www.intel.com/software/products](http://www.intel.com/software/products). ■



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# Mac OS X

An Overview for Developers

**With Mac OS X, Apple asserts its leadership in the advanced technologies and design sensibilities that are the hallmarks of any great operating system.**



Mac OS X is a completely rebuilt implementation of the Macintosh operating system. It expands on Apple's technological strengths, such as industry-standard networking capabilities and industry-leading user interface design.

More importantly,

Mac OS X combines those strengths with support for a variety of technologies beyond those typically associated with the Macintosh, such as UNIX and Java 2 Standard Edition. This unique combination of technologies offers developers stability, power, and interoperability, beneath a well-designed, elegant, and intuitive user interface. As a result, Mac OS X presents new opportunities for both development and deployment.

## Darwin

The stability of Mac OS X begins with Darwin, the open source core of the system. Darwin integrates a number of technologies, including the Mach 3.0 kernel, operating system services based on BSD UNIX, high-performance networking facilities, and support for multiple integrated file systems. Further, Darwin's modular design lets developers dynamically load such things as device drivers, networking extensions, and new file systems.

### Apple and Open Source

Apple is the first major computer company to make open source development a key part of its ongoing software strategy. The core of Mac OS X, Darwin, is itself an open source project. This approach to operating system development allows developers and students to view the Darwin source code, learn from it, and submit suggestions and modifications. Developers can participate in the Darwin open source project by signing up at <http://www.opensource.apple.com>.

Darwin's advanced memory protection and management system ensures reliability by allocating a unique address space for each application or process. The Mach kernel augments virtual memory semantics with the abstraction of memory objects. This enables Mac OS X to manage separate application environments simultaneously, while presenting users with a seamless experience.

Darwin also supplies the following advanced functionality:

- Preemptive and cooperative multitasking.
- Symmetric multiprocessing (SMP) augmented by support for multithreading.
- Real-time support guaranteeing low-latency access to processor resources for time-sensitive media applications.
- An object-oriented device driver programming framework called I/O Kit.

## Graphics System

Mac OS X combines three powerful graphics technologies, Quartz, OpenGL, and QuickTime, enabling developers to push graphics beyond anything users have seen on a desktop operating system.



Mac OS X system architecture

### Quartz

Quartz is the foundation of the Mac OS X imaging model. It is comprised of a high-performance, lightweight window server and a graphics rendering library for two-dimensional (2D) shapes. The window server features such advanced capabilities as device-independent color and pixel depth, layered compositing, and buffered windows for the automatic repair of window damage.

The Quartz rendering model is based on the cross-platform Portable Document Format (PDF) standard, enabling developers to easily embed and manipulate PDF data within any Mac OS X application. This yields such benefits as automatic PDF generation and save-as-PDF, automatic onscreen preview of graphics, conversion of

PDF data to printer raster data or PostScript, and a consistent feature set for all printers.

The layered compositing engine used by Quartz allows developers to create unique onscreen effects. It replaces the "switch model" of traditional windowing systems with a "video mixer" model in which every pixel on the screen can be shared among windows in real time. This model allows for smooth transitions between the states of the graphical user interface.

Quartz also provides developers with these advantages:

- On the fly anti-aliasing of graphics and text enabled by the use of a floating-point coordinate system and high-precision vector processing.
- Direct access to the video frame buffer.
- Automatic detection of and benefit from the floating-point coprocessing performed by the Velocity Engine in PowerPC G4 microprocessors.

### OpenGL

For three-dimensional (3D) graphics, Mac OS X features an optimized implementation of industry-standard OpenGL. OpenGL is one of the most widely adopted graphics standards today, making code written to OpenGL extremely portable and making generated visual effects highly consistent. It is specifically designed for games, animation, CAD/CAM, medical imaging, and other applications that need a rich, robust framework for visualizing shapes in two and three dimensions.

### QuickTime

Mac OS X comes packaged with the latest version of QuickTime, a powerful multimedia technology for manipulating, enhancing, and storing video, sound, animation, graphics, text, music, and even 360-degree virtual reality. It also allows streaming of either live or stored digital video. As a cross-platform technology, QuickTime can deliver content on Macintosh and Windows systems. Augmenting its cross-platform capabilities, QuickTime supports every major file format for images and every significant professional file format for video.

Through the QuickTime plug-in, QuickTime's digital video streaming capability is extended to all popular web



browsers. The plug-in supports over thirty different media types and makes it possible to view over 80 percent of all Internet media. QuickTime also features other advanced web streaming capabilities, such as movie "hot spots" and automatic web page launching.

## User Interface

The most visible expression of Mac OS X power and technology is its new user interface, Aqua. Apple applies its leadership in user interface design to Aqua, incorporating many of the qualities and characteristics Macintosh users expect, while adding advancements to benefit expert and novice users alike. Ease of use is factored into every feature and capability.

Consistent with Apple's design philosophy, visual enhancements serve not just as beautiful images, but as cues to the functionality and operation of the system.



A prime example of this user-focused design is the use of "sheets." These non-modal dialog boxes attach directly to the title bar of the relevant document,

intuitively linking document and action. The non-modal nature of sheets prevents applications from hijacking the system and interrupting user workflow.

## Interoperability

Mac OS X makes unprecedented use of technologies and standards that allow interaction with other platforms. This affords both developers and users the opportunity to use Macintosh computers in new places and in new ways. Mac OS X manages multiple file and networking formats and supports a wide range of industry-standard protocols. Based on an enhanced VFS design, the file system supports multiple local formats and complies with POSIX file system semantics.

Hardware connectivity is simplified through built-in support for Ethernet (10/100/1000Base-T); serial connections for modems, ISDN, DSL; wireless networking through AirPort (IEEE 802.11); USB (Universal Serial Bus); and FireWire (IEEE 1394).

## Java 2 Standard Edition

Mac OS X ships with a complete implementation of Java 2 Standard Edition (J2SE) version 1.3, including the HotSpot client virtual machine. Benefits of Apple's Java

implementation include access to Aqua user interface elements "for free" through Swing, native preemptive multitasking, automatic multiprocessing support and management of JAR files as shared libraries.

This latest advance improves the speed of execution and reduces the RAM footprint of applications which rely on the same archive, such as applications within suites. Mac OS X also plugs the Java windowing toolkit more directly into the Mac's native windowing toolkit, giving Java applications and applets the graphics performance benefits of Quartz.

## Backward Compatibility

To afford users a gentle migration path, Mac OS X builds on Darwin's ability to manage multiple application environments simultaneously. The Classic environment is actually a full version of Mac OS 9.1 running in a protected memory space under Mac OS X. As a result, most Mac OS 9 compatible applications will run side-by-side with Mac OS X applications.

Additionally, developers can code for Carbon, a native Mac OS X environment that allows programmers to take advantage of advanced Mac OS X features while retaining compatibility with the installed base of Macintosh computers running Mac OS 8.1 and later.

## Development Options

There are multiple ways to develop for Mac OS X. Individual skills, preferred languages and tools, target user base, and time to market concerns will influence a developer's approach:

### Carbon

The Carbon APIs are based on earlier Mac OS APIs. While Carbon allows applications to take advantage of Mac OS X features such as multiprocessing support and the Aqua user interface, Carbon is specifically designed to allow compatibility with older versions of the Mac OS.

### Cocoa

The Cocoa application environment runs natively under Mac OS X. For those who wish to develop for Mac OS X using rapid application development (RAD) tools and object-oriented techniques, the Cocoa frameworks provide a fast and complete way to do so. These frameworks offer both Java and Objective-C APIs.

### Java

The Java application environment allows development and execution of Java programs on Mac OS X, including



100% Pure Java applications and applets. The J2SE implementation in Mac OS X is designed to allow maximum Java application portability. Developers can also use the Java development language to write a Cocoa application, allowing Java programmers to use a familiar language to develop for a new platform.

## UNIX

Since Mac OS X is built atop a UNIX kernel, porting UNIX-based applications to the platform is relatively easy. This enables enterprise-level UNIX products to enjoy parity with consumer and business applications on a commercial desktop platform.

Mac OS X offers opportunities for developers from many different backgrounds to port and build innovative and compelling applications.

And the best way to get started is with the Apple Developer Connection:

Apple Developer Connection membership programs offer benefits such as prerelease software seeding, code-level technical support, news and technology updates, and discounts on business support services. Developer documentation and resources are available free at <http://www.apple.com/developer>.

To learn more about developing for Mac OS X, visit the Mac OS X development website at <http://developer.apple.com/macosx>.

To request a free **Programming for Mac OS X CD-ROM** containing tutorials, sample code, and technical documentation designed to provide step-by-step descriptions of the methods developers can use to create Mac OS X applications, visit <http://developer.apple.com/sdtimes.html>.



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# Vast Meteor Rocks World With Hardware Simulator

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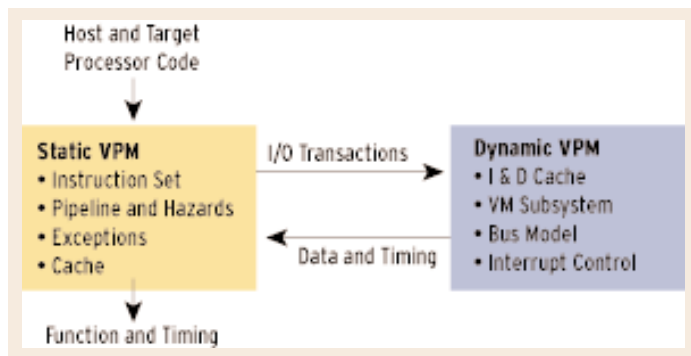
BY EDWARD J. CORREIA

Electronic design automation tools maker Vast Systems Technology Corp. has released Meteor, an embedded software development environment that it claims can deliver the world's fastest system-on-chip simulation for writing and debugging real-time software for presilicon target systems.

Central to Meteor's capabilities is a series of so-called timing-accurate target system models that, according to the company, run at the same speed as their intended processor, permitting developers to build software in advance of the target hardware exactly as it would need to exist on the hardware.

Greg Walker, Vast's (www.vastsystems.com) director of sales, said the technology in Meteor is not like your average simulator. "It differs from a simulator in that it is 100 percent timing-accurate; it runs in real time." And while simulators generally mimic only a processor, Walker said that Meteor "gives you a processor, all associated peripherals, buses and everything that runs in a system," providing a more accurate simulation that requires no changes to code for deployment.

Meteor is available now for



Virtual processor model outperforms instruction set simulation, claims Vast.

a variety of popular target systems starting at around \$125,000 for five development seats, and is designed for time-critical applications. "If you're building a real-time operating system in an environment that doesn't tell you exactly what the time frame is for [task] completion, you're developing in a vacuum," which he said could lead to failure when deployed in the actual target hardware.

As an example, Walker described an automobile air-bag application with a deployment requirement of four microseconds. "If you build your application using a tool that's not cycle-accurate and find that it deploys in six microseconds, it's useless," he said, adding that it is impossible to accurately test the appli-

cation without the actual silicon. "But if you built it with a timing-accurate model, you have the ability to look at the timing interactions between

hardware and software prior to having silicon."

Another major benefit of Meteor, Walker said, is speed. While other simulators can process between 100,000 and 1 million instructions per second (MIPS), Walker claimed that Meteor's runs at about 50 MIPS. He said that when translated into actual developer time, it might take between two and six hours to recompile an embedded system following a code change, but Meteor "does it in about five minutes with complete accuracy." While mindful of revealing trade secrets, Walker said

Meteor achieves performance gains with a virtual processor model approach, rather than the instruction set simulator employed by competitors.

The system permits multiple processors, DSPs and other subsystems to coexist. Meteor runs on Solaris 2.6 and Windows NT development workstations; target operating system support includes Itron, Linux, Nucleus Plus and VxWorks. Target processors available now include ARM 7 and 9 families, Intel Microsignal and XScale, MIPS R3000 and R4000, and the Motorola 68K series. ■

## OSE Offers IPv6 Embedded Stack

BY EDWARD J. CORREIA

Real-time operating system developer OSE Systems has integrated its RTOS with IPNET, an IPv6 protocol stack from embedded developer Interpeak AB, giving developers the ability to add support for the next version of Internet Protocol while maintaining backward compatibility with the current IPv4 standard.

The new IPv6 specifications allow devices to use larger IP addresses, and include automat-

ic configuration and built-in security through the IPsec specification. According to Kevin Pope, OSE's product line manager for network infrastructure products, backward compatibility was a critical issue in selecting a new IP stack for its RTOS. "IPNET provides the means for our customers to drop IPv6 and security into their products while maintaining backward network compatibility."

Available now, the company said the new stack's message-

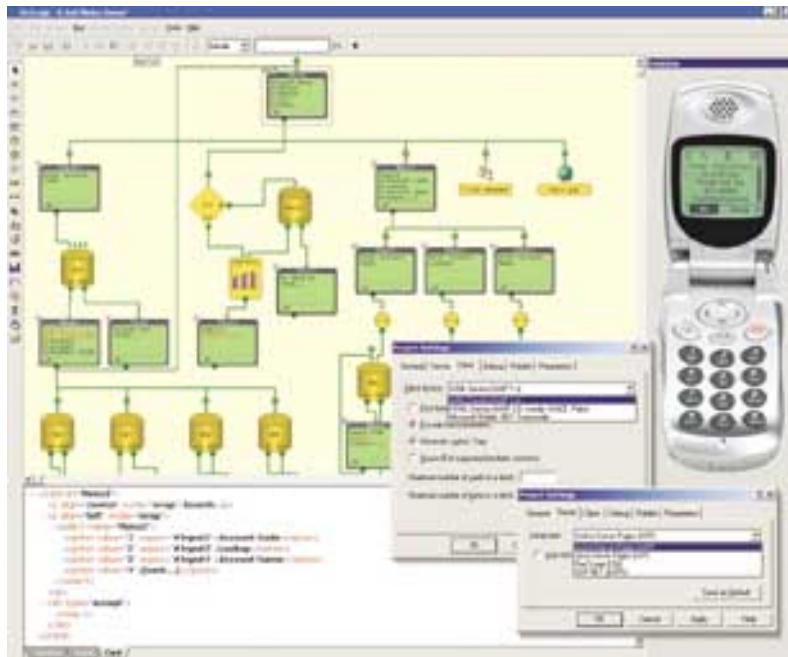
passing interface is integrated with OSE's, and therefore does not require data to be copied over a socket interface. Sharing a common message passing scheme also permits developers to avoid "semaphore and mailbox" programming, the company says. Formerly Enea OSE Systems, OSE Systems (www.ose.com) is a subsidiary of Enea Group, which develops and markets technology-related services and training and is based in Stockholm, Sweden. ■

## AireWeb Targets WAP, Palm OS

BY EDWARD J. CORREIA

AireWeb Technologies Inc. has released the AireLogic wireless development kit, a set of tools that the company claims can give developers everything needed to extend enterprise applications to WAP-enabled phones and devices running Palm OS.

According to AireWeb president Rene Garcia, he plans to differentiate AireLogic in today's crowded wireless tools market by price and quality of service. "There's a big gap out there for developers wanting these applications. What's out there is either very expensive or is provided by companies with little or no expertise."



Flowchart development model supports multiple targets and provides simulation.

The Windows-hosted IDE starts at \$4,998, with separate versions offered for ASP, ASP.NET, JSP and Perl; all are available now. Garcia said that a J2ME implementation is under development. A hosted version also is available and costs \$299 for the front-end development tools and \$79 per month for each developer. The company says it is working on versions for .NET and J2ME targets. The company also offers a fully functional trial version at [www.aireweb.com/trial](http://www.aireweb.com/trial).

Garcia described the developer's experience in using



Either competing products are too expensive or the provider lacks expertise, says AireWeb's Garcia.

AireLogic, which also includes device emulators and a debugger that can perform complex variable and database simulations. "The developer builds an application by creating a flowchart of the application," Garcia said. "Once the application is ready, the developer selects from a variety of technologies on the server and client sides" to generate the necessary code for both the server and client, which can then be published from within the IDE. "Our technology allows the developer to automatically upload the generated code via FTP or HTTP" to the deployment server, he added. WAP and Palm clients browsing to the server can download the applications and execute them locally. ■



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# SQL Anywhere Studio 8.0 Goes to Beta

BY EDWARD J. CORREIA

Sybase Inc. subsidiary iAnywhere Solutions Inc. has released for beta testing SQL Anywhere Studio 8.0, a new version of its wireless database application development environment that the company says will offer faster query processing, improved security and enhanced synchronization capabilities.

According to Chris Kleisath, iAnywhere's director of engineering, the new version will improve query performance thanks to more flexible algorithms, such as those used to join together tables for displaying complex queries. "In previous versions there was one algorithm for processing joins; now there are three or four, plus enhanced algorithms for handling grouping and sorting," he said. Kleisath also said that further enhancements have been made to the optimizer, which recognizes the kind of query being submitted and selects the appropriate algorithm.

The beta also will introduce Patricia Trie indexing, which Kleisath said allows the search engine to find data from rows in the index more quickly. Patricia, an acronym for practical algorithm to retrieve information coded in alphanumeric, consists of a data structure and algorithms that Kleisath said will work alongside SQL Anywhere's existing approach. "If the size of the object you are indexing is over 10 bytes, our database engine automatically chooses to use the Patricia Trie rather than the hash-based approach." Trie (pronounced "try") is derived from "retrieve."

Also new will be synchronization priority, which permits developers to selectively include and omit data to be synchronized. Kleisath said this can help maximize wireless bandwidth, "because you're only getting the information you really need." Kleisath said the capability also can be exposed to users, permitting them to select the data that should be synchronized during a connection.

Security also has been improved with the addition of client-side encryption and enhancements to the server side. According to Kleisath, local encryption will protect data residing on a device in the event that the device is lost or stolen, a feature most interesting to gov-

ernment, finance and health-care industries, he said. But "you don't get something for nothing," he noted, adding that about a 5 percent to 20 percent performance drop and battery-life penalty should be expected

when strong encryption is used.

Kleisath also said that the user interface has been supplemented with a graphical query display. "When they click on nodes in a tree, they can see how a query will be executed, see

what indexes are being used and what statistics went into the optimizer's choice," he said. The tools also will automatically generate server-side query scripts that developers can customize to their needs, he said.

The beta version of SQL Anywhere Studio 8 can be downloaded at [www.iAnywhere.com/developer](http://www.iAnywhere.com/developer), and is scheduled for release before year's end. Pricing has not been announced. ■

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# MetaMatrix Adds Modeler to Its Server

BY CHRISTINA M. PURPI

MetaMatrix Inc. is attempting to do for developers what Microsoft Corp. did with desktop applications for end users. MetaMatrix is releasing into

beta its upgraded query processing server version 2.0, which is newly extended to include a new metadata modeler called MetaBase. Both elements help developers integrate informa-

tion sources into applications.

Microsoft, according to Gregory Milbank, senior vice president of sales and development at MetaMatrix (www.metamatrix.com), has standardized a

command set to make it easier to learn how to run and share software programs across applications on the desktop. He claimed that MetaMatrix similarly simplifies the process of

integrating and creating relationships between disparate information sources.

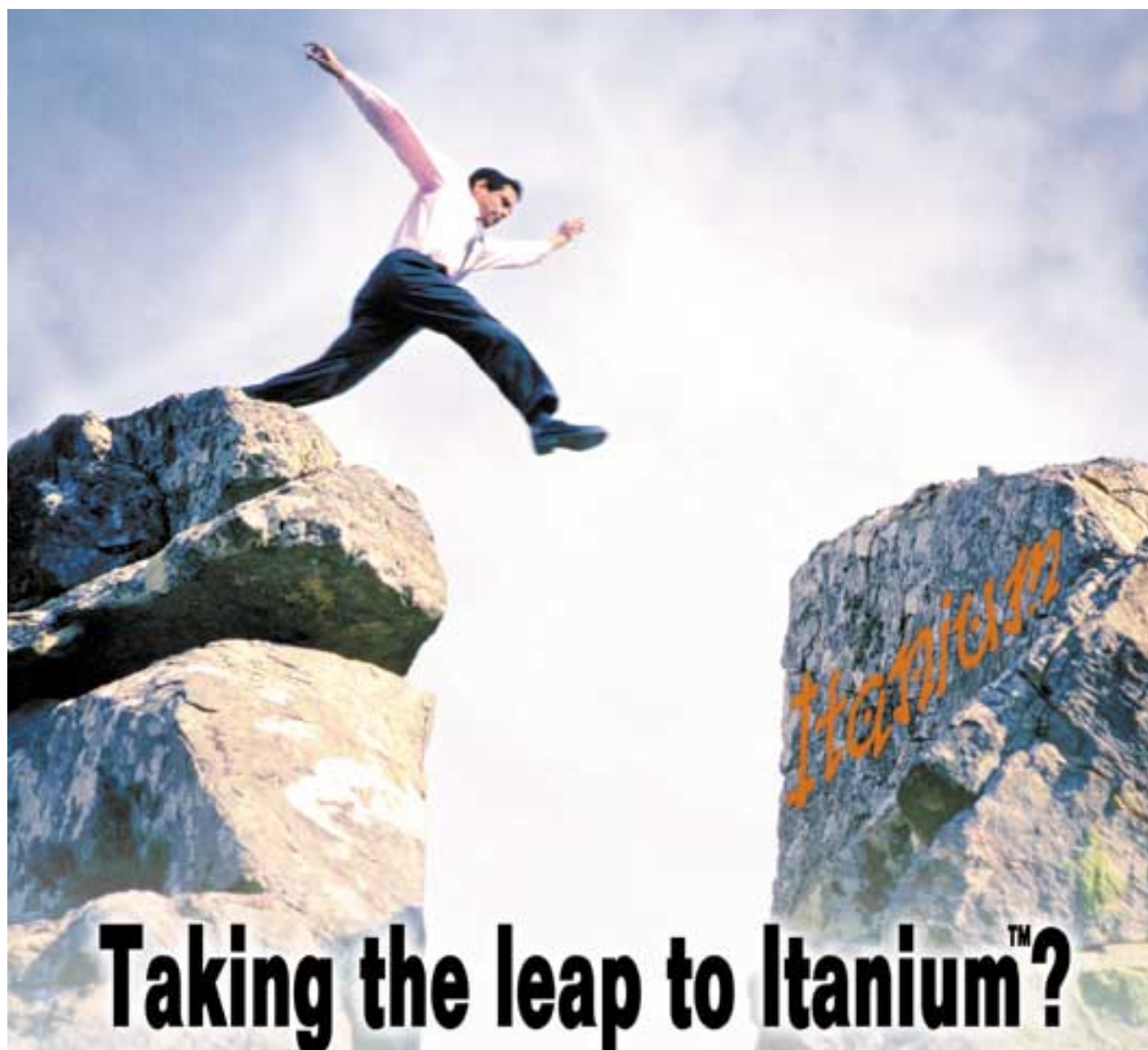
The server shares real-time data, text files and other types of data across applications and creates a single point of access for information, according to the company.

The MetaMatrix server sits between applications and data and also integrates and manages physical information sources and supports any data structure, whether it is message-oriented, middleware or streaming sources.

Milbank claimed that in MetaMatrix 2.0, metadata is stored in memory from a relational database using OMG's MOF, XMI and CWM standards. The MetaMatrix server runs as an extension of core services of Java application servers and converts application servers to handle synchronous and asynchronous transactions, he said. Also new to version 2.0 is the use of virtual metadata that allows for the creation of different "views" of existing data sources.

The server acts as a scalable repository of metadata against which users can execute queries to get to the underlying database in real time, according to Milbank. The new MetaBase module provides a unified way to create an enterprisewide metadata model that allows data administrators to model the structure of their disparate data sources as one logical data source across departments or enterprises, said Milbank, adding that it adds another virtual metadata layer of transformations that will remain in a component separate from the technical layer. The data modeler can import metadata directly from the schema of JDBC-compliant relational databases.

Version 2.0 also now supports IBM's WebSphere application server, according to Milbank, who added that the beta version of the MetaMatrix server will be available on Sept. 7 and should be ready for general release on Oct. 12. Pricing for the server runs at \$75,000 for the first processor and \$50,000 for each additional processor, plus a mandatory 20 percent annual maintenance fee. ■



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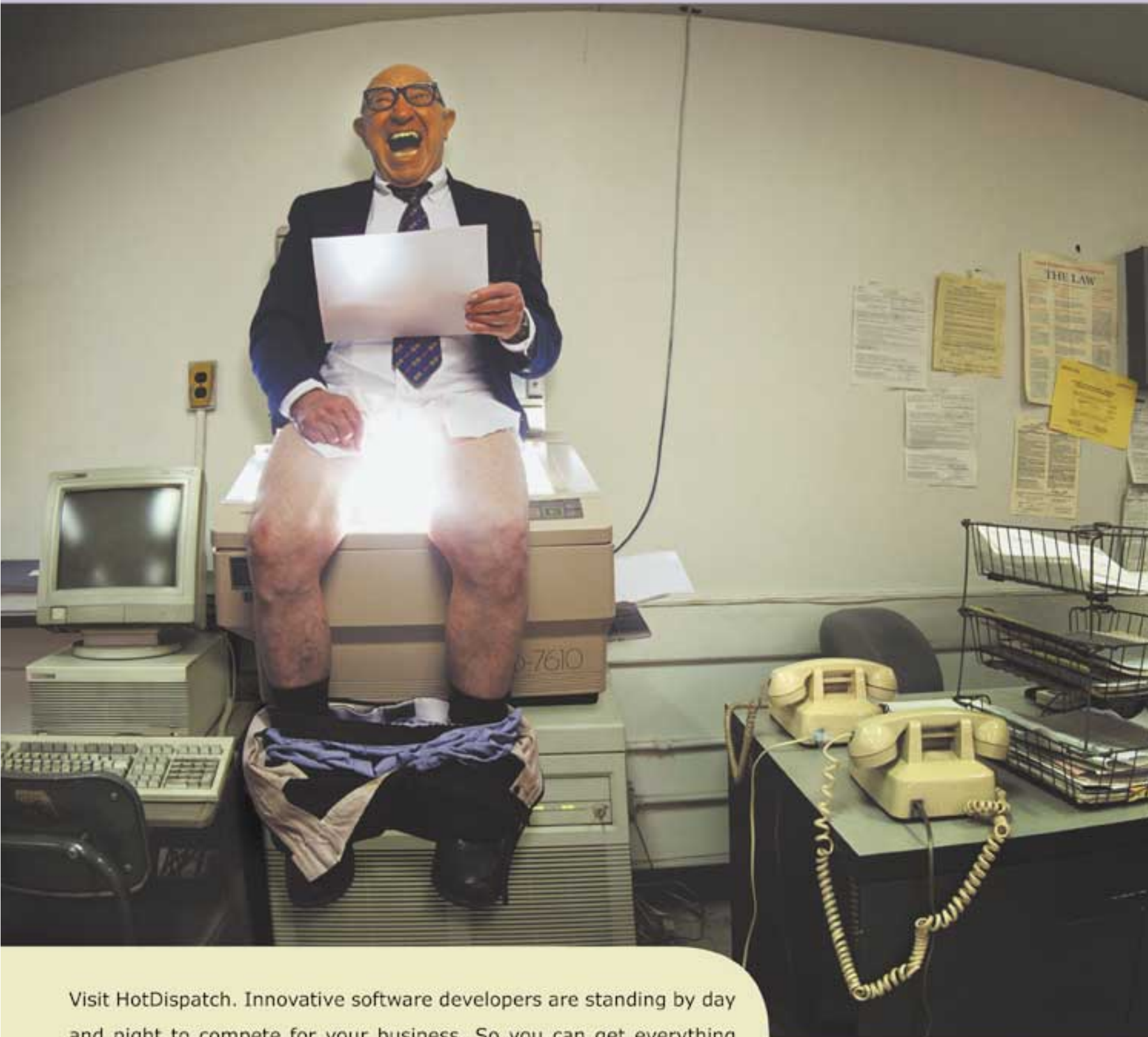
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# Is Itanium In Your Future?

Exponential power increases require changes in programmer thinking

BY EDWARD J. CORREIA

**W**ith the release of the long-awaited Itanium 64-bit microprocessor by Intel Corp., an army of 32-bit x86 programmers will for the first time be introduced to 64-bit development, and its 4 billionfold-capacity increase over 32-bit platforms. And while the majority of applications may never need to access files approaching the Itanium's claimed 18 exabytes in size, many applications have exceeded or are approaching the 4GB memory limitation of Intel's 32-bit chips.

Peter Crosby, product line manager for Solaris tools at Sun Microsystems Inc., which makes the competing 64-bit UltraSPARC microprocessor, explained some of the reasons for performing 64-bit development. "With our customers, it's generally the scientific and technical people that were first to move to 64-bit platforms," Crosby described an academic customer that is doing atmospheric research. "They are moving huge amounts of data around, and they need 64-bit data addressing and 64-bit floating-point operations for their arithmetic."

Steven Speer, technical marketing manager at Intel's Solutions Enabling Group, said that because of their large memory and file size requirements, digital animation and video production also can benefit from larger capacities while improving system performance. "You don't have to shuffle things in and out of memory or change the address space you're looking at, which are incredibly expensive operations in terms of time."

According to Speer, another growing need has been for e-commerce systems to keep up with an ever-increasing user base. "As the number of transactions that are taking place becomes larger, the in-memory database that allows these systems to be responsive gets increasingly larger and you need much larger address space to manage that computing environment. If you look at how many transactions are taking place at [online auction house] eBay, sooner or later they're going to run out of unique auction IDs."

Graham Lovell, product marketing director for Sun's Solaris operating environment, provided another example. "What a lot of the telcos do is maintain their subscriber lists in very large arrays" for caller ID and other applications that

require instantaneous response. "Sixty-four-bit platforms are typical choices for those types of applications."

Randall Hoff, director of product development at database developer FairCom Corp., described how a life insurance application in use by PDMA—formerly a division of IBM that specializes in software for life and health insurance companies—exploits advanced capabilities. "They have one customer that maintains 660,000 separate policies, and their database was rapidly hitting that 4GB limit."

## SAME TOOLS, DIFFERENT TECHNIQUES

According to Sun's Lovell, developers won't see much change when moving to 64-bit platforms. "The appearance of the tools to a developer doesn't need to be very different, but the underlying tools are structured very differently, and the compilers, of course, generate different code." The main difference to developers, however, is in the programming techniques they will need to employ.

Crosby said that because of their ability to address larger blocks of memory,

64-bit systems can simplify development by reducing the number of times memory is allocated and subsequently freed within an application by simply grabbing all the memory it will need at runtime. "And although it takes a while to allocate that big lump of [RAM], they remove all the other bottlenecks of memory allocation from their application and gain a performance improvement that way."

Intel's Speer said that many of the innovations that accompany Itanium, including its explicit parallel instruction computing (EPIC) technology, are taken care of by the company's newly announced C++ and FORTRAN compilers and are therefore transparent to developers. "EPIC is exploiting parallelism between instructions within the processor. In Itanium, instructions are executed during each clock tick in bundles of three. This is instruction-level parallelism, as opposed to macro-level parallelism, which is coded by developers." This change places a lot of pressure on the compiler, Speer said, and as a result, a "big investment has gone into



modernizing the compilers for the Itanium architecture."

Red Hat Inc., which has been developing and marketing 64-bit Linux versions since the first Alpha microprocessors, now offers a version for Itanium. Marty Wesley, director of Red Hat Linux, said that Linux can help to minimize the transition to 64-bit development because much of the hard work has already been done. "It's trivial to take advantage of the additional features [of 64-bit hardware] because the code is already set up to run well on 32- or 64-bit platforms." And although device drivers and the kernel are hardware-specific, "the typical developer doesn't have to worry so much about that because all of the resources they need are provided by the drivers, the kernel or by glibc [Linux libraries]."

Red Hat also offers an open-source Itanium compiler, which Wesley said is unlike others on the market because it is self-hosted. "We provide you the compilers and all the source code so that if you needed to, you could rebuild the distribution from scratch."

In addition to its Linux version, which Intel was scheduled to release in August, the company offers a C/C++ compiler as an add-on to Microsoft's Visual Studio IDE that sells for \$499 or \$275 for an upgrade. The FORTRAN compiler, which integrates with Compaq's Visual FORTRAN environment and can be used with Visual Studio, sells for \$549 or \$295 for an upgrade. Both compilers also support the Pentium 4.

## LANGUAGE BARRIERS

Differences in programming languages will have the biggest impact when converting apps to 64-bit, said Sun's Crosby,

adding that C and C++ programs generally will give developers more trouble than FORTRAN. "For example, FORTRAN doesn't really have pointers, and pointers are the place that you will get the biggest trouble moving from 32 bits to 64 bits." On the other hand, C programs can have many pointers, and if they suddenly are translated to 64-bit, "there's a piece of the application that is now grabbing 64 bits of data when only 32 bits of it have been allocated, so there's 32 bits of unknown data in your application."

Intel's Speer said that another critical migration issue when moving code to Itanium is data alignment, such as when a structure is set up as a union and accessed incorrectly for one of the data types. And he said that while developers should avoid pointer arithmetic and other "creative" coding techniques in which developers move "toward the margins of computing specifications, the [Intel] compiler does a very good job of flagging these for the developer."

Red Hat's Wesley also warned of migration pitfalls. "Be aware of size-limited programming techniques. You can't rely on something being only 8 bits, 16 bits or 32 bits. You need to abstract the size of the element you're working with. Applications written that way generally will require only a recompile" to work properly on other platforms, he said. "And if you have to have size requirements, be sure to set them off with alternative code paths."

According to Anne Thomas Manes, Sun's director of market innovation, the best way to handle memory allocation problems and other complexities of developing for 64-bit computing is to avoid them altogether. "If you're using any kind of high-level language such as Java, Visual Basic or C#, most of that memory allocation is taken for you. You just want to make sure that your runtime system for your language supports 64-bit processing," as Sun's does, she said, adding that Microsoft's does not, "and probably won't for a while."

Microsoft spokespersons refused to comment on the company's plans for its 64-bit development tools, despite repeated requests. However, Microsoft currently is offering what it calls a "limited edition" of Windows 2000 Advanced Server ([www.microsoft.com/WINDOWS2000/64bit/overview](http://www.microsoft.com/WINDOWS2000/64bit/overview)) for evaluation, which its literature claims offers a principal benefit of raising the maximum addressable memory from 4GB to 16TB, short of the technology's theoretical limit of 18EB. This version of Windows is available only through hardware OEMs. Microsoft also has posted information about the 64-bit version of the forthcoming Windows XP at [www.microsoft.com/windowsxp/news/64bit.asp](http://www.microsoft.com/windowsxp/news/64bit.asp).

► continued on page 28



The best way to handle 64-bit complexities is to avoid them, says Sun's Manes.



## ITANIUM

← continued from page 27

Crosby said that memory profiling tools, such as those provided with Sun's Forte development suite, can be helpful for analyzing how memory is used by an application, an important step in determining whether an

application should be migrated or not. "Not every application needs to be moved to 64-bit, and some will require a complete redesign" to take advantage of 64-bit capabilities.

Sun's Lovell said that there is generally no perceptible difference between running 32-bit applications on their native plat-

forms and running them on one of Sun's 64-bit boxes. "But what they gain is the ability to run 64-bit applications alongside 32-bit ones. The benefit for the customer is that they don't have to convert all their applications to 64-bit at the time they switch platforms."

The Itanium also can run

32-bit and 64-bit applications, but unless they are recompiled, 32-bit apps will run slower on the Itanium because of emulation, Speer said. Not so with Sun's 64-bit microprocessors, claimed Lovell. "There's no recompilation needed to take advantage of the hardware." But Intel says

that developers adhering to ANSI standards should encounter few problems when recompiling, and remaining problems will be picked up by the compiler, Speer said. "If you fail to address the [code migration] issues, the compiler will flag you and let you know that what you are doing is no longer legal."

Speer said that in order to take full advantage of Itanium, the only path is to clean code and recompile. In superscalar processors such as Pentium, he continued, part of the processor's job was to read instructions to determine which could run in parallel. "What the Itanium processor does, and this is where the explicit part comes in, the compiler actually identifies [parallelism] for the processor and sets up the code stream so that the processor is digesting instructions in bundles."

Despite these advances, Lovell does not see Itanium as a threat to Sun's 64-bit server business. "What we're seeing is that a number of customers are not committing to Itanium, but are waiting for McKinley," Intel's code name for the next version of Itanium. And even though Itanium is now here, Lovell said that it could take years before it is ready to operate well in production servers. "The big vulnerability for the Itanium platform is getting the massive device drivers that run on 32-bit across onto 64-bit. It's not just applications, but the drivers for a plethora of things people want to connect to Itanium systems, which are almost exclusively 64-bit. Don't underestimate how much work is involved in getting Itanium to the same level of support that the 32-bit is," he said.

To illustrate his point, Lovell recalled that Sun had released its first 64-bit processor in 1991 with the SPARC P9, and didn't begin offering an operating system and developer tools that were fully 64-bit savvy until 1998. According to Intel, operating systems currently available for Itanium include AIX 5L, HP/UX 11 and several versions of Linux, including Red Hat. Microsoft is scheduled to release the 64-bit version of Windows XP at the end of October, and 64-bit versions of its .NET servers about six months later, according to a spokesperson. ■

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# Avoiding a 64-Bit Migraine

BY EDWARD J. CORREIA

To run applications on Intel Corp.'s 64-bit Itanium processor, developers have three choices: emulation, recompilation or migration.

According to Steven Speer, technical marketing manager at Intel's Solutions Enabling Group, source-code migration should be the ultimate goal, and emulation chosen only a last resort. "That [emulation] environment is there to allow developers who may no longer have source code or have dependencies on applications that will not be ported," he said. And while Itanium's so-called Windows on Windows (WOW) compatibility mode may allow many 32-bit apps to run unchanged, it is far from ideal. "It is not a particularly high-performance path. So if this is performance-critical code, it would not be recommended."

Speer said that under the second option, careful Windows 32-bit developers can benefit from some of Itanium's performance gains by recompiling their source code with only a few changes required. "On the Windows platform, developers must reconcile the fact that pointers are now 64 bits, while all legacy data types remain at 32 bits."

To ease migration, Microsoft has introduced two new sets of data types, Speer said. "Some of the new data types, such as int64 and longlong, are fixed at 64 bits, while others are polymorphic," which he explained are data types that permit applications to compile correctly for either Pentium or Itanium. "By using polymorphic data types, developers can maintain a single set of source [code] for both processor platforms."

To take full advantage of all of the Itanium architecture, including its explicit parallel instruction computing (EPIC) capabilities, Intel advises "that developers migrate their code to the 64-bit environment," Speer said. EPIC refers to Intel's proprietary technology that relies on the Intel compiler to organize instructions so they can be executed in parallel more efficiently. Intel offers CodeClean, a set of guidelines designed to help with source-code migration for Windows and Unix.

Developers also can get help from Migratec Inc., which specializes in code migration tools.

The company recently released 64Express, a code analysis tool for C and C++ that it says provides an itemized inventory of exactly where program code needs to change to conform to CodeClean.

According to Simon Mak, Migratec's vice president of business development, the main benefit of 64Express is the way it organizes code. "To try to figure out where all the changes need to be would drive you crazy."

Other advantages, according to Mak, include code consistency. "If you have 10 different code fixes. We fix the code in a standard format, and that's going to help for code maintenance in the future."

64Express costs \$25,000 per application or between 10 cents

and 25 cents per line of code, depending on the usage model. The company ([www.migratec.com](http://www.migratec.com)) also offers a free version through porting centers that have been set up by partners Compaq Computer Corp. and Intel Corp. Otherwise unrestricted, the free version is limited to 10,000 lines of code. ■



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## EDITORIAL

## Entering a 64-Bit World

It's the future of back-end computing, and ultimately the desktop as well. Sixty-four-bit servers can excel at nearly any processor-bound industrial-strength task. Their larger memory address space makes them more efficient at database processing, particularly data mining. Number crunching and graphics manipulation are inherently more efficient, thanks to wider integer and floating-point data types and instruction set operations.

There's a feeding frenzy around Intel's newly released Itanium processor, which boasts improved scalability and better performance over the Pentium III and Pentium 4 families for the chip maker, as well as higher profit margins for Intel and the 30-plus hardware OEMs currently offering first-generation Itanium servers and workstations. That makes it easy to forget that Intel is late to the 64-bit party. Chips like Sun's UltraSPARC, HP's PA-RISC and Digital's Alpha (which its new owner, Compaq, has announced will shortly cease to exist) are supported by Solaris, HP-UX, Tru64 Unix and several 64-bit Linux distributions, and are installed within enterprise servers today. From the software development perspective, the Itanium processor offers those customers few, if any, advantages over the other, more mature 64-bit platforms.

For enterprises rooted in the 32-bit world, Intel's mass-market blessing of 64-bit computing will be nothing short of revolutionary. Thanks to Intel's market clout, and an ability to inspire OEMs in a way that Sun, HP and Digital could never even imagine, Itanium-based servers will become cheap and ubiquitous. Itanium will be a particularly compelling platform for scaling Linux—the first operating system available for the chip, heartily endorsed by Intel's release of C/C++ and FORTRAN compilers.

Despite the availability of Linux today, many IT managers will wait for native 64-bit Windows running on the Itanium before moving from x86. Enterprise developers have their fingers crossed, hoping that the eventual Windows migration process will be relatively painless.

Microsoft should cross its fingers also. Whenever an operating-system vendor changes microprocessor architectures, the results can be nasty: Remember the pain when Apple moved the Macintosh from the Motorola 68030 to the 68040, and then again to the PowerPC? At least the 680x0 and PowerPC were all 32-bit architectures. A shift from a 32-bit to a 64-bit platform is orders of magnitude trickier.

Itanium represents a special watershed for Microsoft. Even if the company increases its dominance on the desktop with Windows XP, the 64-bit platform is the key to the future data center—yet the company carries considerable baggage, thanks to its historically tight coupling with the 32-bit x86 instruction set. If Microsoft blows the critical Pentium-to-Itanium transition, it might lose the war. ■

## WATCHING JAVA

With this issue, Steven J. Vaughan-Nichols debuts his Java Watch column for SD Times. Vaughan-Nichols, a contributor to such publications as Byte, The Washington Post and Web Developer, was formerly editor-at-large of ZD Inc.'s Sm@rt Partner. His column, which replaces Open Source Watch, will examine the impact of Java, and particularly J2EE, on enterprise computing. Read Java Watch on page 35.

## GUEST VIEW

## WELCOME TO THE BAZAAR

The huge momentum behind open-source software has executives talking about their open-source strategies and developers eager to put the most well-known projects on their resumes. It also has got many development managers scratching their heads, trying to figure out how to justify investment in open source in terms of ROI (return on investment).

Let's talk about a couple of ways that investment in open source can directly and indirectly affect your company's bottom line and product line.

By investing in strategic open-source projects, companies can increase their marketing reach, quality of products, perception of being an industry and technology leader, and revenue from sales and support of open-source-based or related products. Participants also have a valuable community in which to develop entry-level staff members and an opportunity to monitor and affect competitors' influence on the industry.

**Marketing Reach.** Marketing reach is affected by having a visible presence within the open-source communities. By contributing documentation, tutorials or sample projects to an open-source project, a company may include links to its site regarding its support and expertise in a particular technology. This creates sales leads directly from the open-source community. While your products will still need to be attractive to customers, these sales leads are extremely valuable.

**Improved Quality.** Quality levels are affected in a number of ways when leveraging an investment in open source. By choosing to use a particular open-source product within your commercial offering, you take advantage of the testing effort of a large community of users. Also, by offering a free evaluation copy of your supporting software to the open-source communities along with a channel for feedback, you are able to leverage that built-in user testing base in order to help meet users' needs and expectations. By including open-source products within your commercial offerings, you are able to discover and fill in

gaps in your existing feature set and functionality with fewer internal resources.

Also, in markets where open standards and specifications are driving the development effort, there is always a bit of room for specification interpretation discrepancies. By participating in a project that relies on the implementation of a particular specification, your developers can identify those discrepancies earlier in the development cycle.



LARRY  
MCCAY

**Technology Leadership.** Being perceived as an industry and technology leader is important in gaining market share and credibility within the industry. A visible presence in open-source communities provides you with this opportunity. By answering questions and providing solutions for the problems of a community's users, you raise the stature within that community. And by authoring technical articles that profile the project, you raise the credibility of the project as well as your company.

**Revenue.** While open-source software is, by definition, free software, that generally does not mean that it must be free of charge. You may sell products that are open source or that are based on open-source products.

For example, you can sell a suite of open-source products that have been tested and are supported on your platform(s), or develop and market commercial tools that help businesses use an open-source product. You can even undermine the market share of a competitor by helping to develop and promote an open-source alternative to its differentiating technologies.

**Cultivating Entry-Level Employees.** It is often difficult to assimilate entry-level employees into the critical path of your company's development cycle, and to bring them up to speed on real-world issues.

Open source provides a challenging training ground for these employees. In concentrating the effort of aspiring engineers in the open-source communities, they act as channels for the vision of the company into these communities. And by affecting the direction taken by key open-source projects and technologies via these

employees, you are able to affect the direction of the industry at large.

Encouraging new engineers to be visible in the community through active participation provides two other benefits for your company. First, you raise the credibility of your company. And the second benefit is that you contribute greatly to the career development of the entry-level engineer.

**Competitive Edge.** The ability to monitor and affect your competitors' influence on the industry is often a difficult thing to achieve. Through participation in key open-source communities, you can see the contributions of all the members and try to influence their acceptance in a manner that would be in line with the goals of your company and the industry at large.

How can you participate in open source? Here are a few ways:

Most open-source projects use mailing lists to facilitate communication, with generally separate lists for users and developers. You easily can participate in the project by subscribing and contributing to its "development" mailing list.

Most projects also maintain a to-do list, and you can encourage your developers to volunteer for tasks on that list. As time goes on, you can try to achieve Committer status, which provides you with direct access to the source-control system and the ability to check in code changes.

Many open-source projects also welcome monetary contributions.

The return on your open-source investment is multifaceted. You can generate revenue directly and indirectly, and your investment directly and indirectly increases your products' quality and market share. Participation aids in the development of your technical staff and provides insight into your competitors' activities. Finally, investment in open-source communities protects your other development investments by influencing the development of future standards. ■

*Larry McCay, a senior architect at Hewlett-Packard Bluestone, has been designing and developing software for over 10 years.*



## GUEST VIEW

## CAN YOU TRUST WEB SERVICES SLAs?

In business, it is a common practice to supplement corporate health insurance with an umbrella of self-insurance to protect against catastrophic loss. Oddly enough, it is not considered practical to supplement other business risk propositions, such as service-level agreements (SLAs) for Web services, under a similar umbrella.

If asked, most C-level executives will tell you that they are aware of the "basic" risk factors of Web services SLAs. An awareness of these risks is the reason why most early adopters limit agreements to highly trusted trading partners, or allow them only among business groups within an enterprise. However, note that even in this cautious environment, SLA protection is a false assumption with a variety of limitations.

Only a thorough review of all Web services options will allow a business to obtain a semblance of security upon entering into an SLA. A global business must ask the right questions, verify agreements, choose the right tools and avoid "cascading SLAs." By taking these precautions you're immediately self-insuring your interests, thereby protecting your business as you participate in Web services.

Of course, outsourcing Web services operations can be extremely valuable when deploying stable infrastructure with a trusted and competent partner. But simply taking existing internal systems and opening them up to the outside

world can be dangerous!

Understanding business requirements, expected usage patterns and system capabilities can go a long way toward ensuring successful deployments. Ask these questions to better understand requirements entering into a Web services SLA.

- What levels of availability are needed for this system?
- Can the business tolerate Web services downtime? How much? Have the systems been designed and tested to meet these requirements?
- Is adequate redundancy built in so that services can be offered in the event of a system or network failure?
- What transaction volumes are expected of these Web services? Do the transactions come in a steady flow, or do they burst around particular events like the open or close of the business day or seasonal rushes?
- Have underlying systems been designed and tested to meet these peak load requirements?
- How important are request response times? Understanding user expectations in this area can radically affect the cost of an SLA. A guaranteed subsecond response time to a globally distributed audience is an expensive proposition at best. Understanding the business requirements here is critical for managing costs.

Your answers to those questions can go a long way toward defining the parameters of an

effective Web services SLA. But assuring that the promises are consistently delivered requires an independent verification of compliance. A growing number of companies offer verification technology and services. However, you can perform your own verification by first understanding the two keys to effective verification.

First, understand the critical success factors for a particular Web service, and second, determine a periodic method for testing. The following factors should regularly be evaluated: delivery of acceptable response times under normal load and expected peak load; delivery of at least degraded service in the presence of system or network failures; and delivery of acceptable response times across the various geographies where the service is consumed.

Next, choosing the right technology foundation to build and deploy Web services is critical. Building applications from the ground up by direct coding to J2EE or .NET APIs may be appropriate in some instances but may be unnecessary and waste precious software development resources. For common applications like sell-side e-commerce, if there aren't too many business-specific requirements, a packaged solution may offer better Web services publication. In other cases, a comprehensive application platform that automates the specification of Web services, Web presentation, business process modeling and object persistence services

may be a more appropriate technology foundation. Limiting the number of technology partners and choosing them strategically are critical to success. Having too many moving parts in any Web services can be a recipe for disaster.

Keep in mind that Web services relationships are both vendor to customer, and partner to partner. In the case of partner relationships, it is likely that each has separate service-level agreements. This creates a problem called "cascading SLAs," which represents the cumulative impact upon a Web services agreement produced by the subsequent implementation of other service-level agreements.

For example, Partner A upgrades a system with Vendor X, but Partner B does not. Partner B must then abide by the service agreement set up between Partner A and Vendor X. If the new service-level agreement is left unchecked, the partners will then become dependent on the fragmented quality of service from the new combination of vendors. This leads to a higher probability of applications breaking down within the Web services chain.

It is better to err on the side of caution with the understanding that the burgeoning Web services industry offers no real security—and self-insurance is the intelligent and responsible solution for complete business protection. ■

*Christopher M. James is vice president of marketing and business development at Alto-Web Inc.*



**CHRISTOPHER M. JAMES**

## LETTERS TO THE EDITOR

## ORACLE 9iAS A WINNER

I read your article in SD Times ["Larry Vs. Lou," Aug. 1, page 41] and found it very interesting. I have experience with both application servers. I have been very impressed with the Oracle 9iAS (Orion) app server. I have easily run applications that use both SQL Server and Oracle without a problem (I have to try DB2). I find it to be much easier to install, a smaller footprint and very easy to deploy applications on. (The Hot Deploy works great!) IBM WebSphere requires a lot of hardware to run (you would expect that given the source) and is brutally slow on start-up and app

restart, which occurs often during development. I had to put a half a gig of memory in my laptop to run it effectively. I think Oracle has a real winner of a product here. It will be interesting to see how they compete with it.

**Joseph G. Noonan**

Product Development Manager  
NeuVis Software Inc.

## GOOD POINTS ON FUNCTION POINTS

Thanks for your [book] review on function points and helping promote the topic ["Analyzing Function Points," March 15, page 33]. There is a free book, which is a good source of function points. The free manual

can be downloaded at [www.SoftwareMetrics.Com/free manual.htm](http://www.SoftwareMetrics.Com/free manual.htm). By the way, the manual is downloaded about 2,000 times per month and since January of this year has been downloaded over 12,000 times. I decided to distribute the book in this manner instead of using a publisher. Many people have told me that I am crazy for giving away my book!

By the way, the book discusses what a function point is and why they are useful. A function point is nothing more than a unit of measure for software, like a square foot. We human beings like to categorize things; function point analysis is a method to categorize components of a software applica-

tion. This is no different than a librarian following a set of rules to establish a library. There are several full articles on our Web site at [www.SoftwareMetrics.Com/Articles](http://www.SoftwareMetrics.Com/Articles).

**David Longstreet**

[www.SoftwareMetrics.Com](http://www.SoftwareMetrics.Com)

## CORRECTION

John Pompeii is chief technology officer of Secant Technologies Inc. His title was incorrectly stated in the Aug. 1 issue.

Letters to SD Times must include the writer's name, company affiliation and contact information. Letters become the property of BZ Media and may be edited. Send to [letters@bzmedia.com](mailto:letters@bzmedia.com), or fax to 516-922-1822. Please mark all correspondence as Letters to the Editor.

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## WARMING TO COLD FUSION

Most markets within the computer industry are composed of mainstream vendors all doing pretty much the same thing, a couple of vendors modifying the core product for niche markets, and frequently one conspicuous vendor who is doing something completely different. Take the PC market, for example. The herd of big guys includes the familiar elephants: Compaq, Dell, Gateway, IBM, Toshiba and so forth. Then, there are the niche players, like VA Linux (well, until it pulled out of the hardware biz, that is), among others. And then the one completely different company, Apple.

The J2EE market has similar counterparts: BEA, HP and IBM are the main herd, along with Oracle someday. Then there are niche players like Persistence Software, Unify, the open-source folks and a gaggle of other vendors. Off by itself is Allaire's JRun, a product I have discussed before in this column ("Allaire's Practical J2EE," April 1, page 39).

JRun and the Macintosh are both distinguished by a compelling characteristic: ease of use. Both products pitch simplicity to the common user. And for this one trait, customers of all stripes—whether technical or not—are willing to

pay handsomely. Originally, techies scorned simplicity (see the Unix command line for details). But Internet product cycles soon clarified things: No one had time to learn recondite features. Ease of use was mandatory.

One of the first tools to deliver ease of use in the age of the Web was Allaire's ColdFusion server, which was born in the mid-1990s in response to the slow torture of using CGI scripts to generate dynamic Web pages. ColdFusion's initial specialty was integrating SQL commands into the generation of Web pages. It did this through the use of its own set of tags that used an HTML-like syntax. The language, ColdFusion Markup Language (CFML), became the "other" HTML—the Macintosh to the PC. It was different, and its key advantage was ease of use. From this base, ColdFusion soon became the fast way to create great Web sites.

The arrival of ASP and JavaScript cut into this franchise. But Allaire continued revving the product and adding features that kept it ahead of these technologies. Today, Allaire is owned by Macromedia. And Macromedia announced its com-

mitment to ColdFusion by its recent release of version 5.0.

This release adds some spectacular features. Consider that ColdFusion can place dynamic graphs and charts into Web pages via a set of simple tags. Or it can integrate data records extracted via SQL into a loose collection of fields that can be queried. This allows developers to search data from completely disparate sources for specific values and generate dynamic pages from the results.

Want to make up your own tags?

ColdFusion helps you do it. And if you have custom functions of your own—be they in C/C++ or Java—ColdFusion can call them individually, passing them parameters and accepting return values.

ColdFusion also can integrate with mail systems and Lotus Notes—a useful capability when building intranets. And it can interact with infrastructure like CORBA (where it interacts as a client), IBM's MQseries middleware and SAP back ends. It also works with J2EE and most Web servers.

You get the idea from all these useful features and all this compatibility that Macromedia has put a lot of time and effort into working on what developers need. This is an impressive product

from pretty much any perspective.

Most products that tout ease of use suffer from one of two drawbacks: They offer a limited set of features, or the ease of use encumbers experienced users. Without getting into religious wars, I view the Mac as falling into the latter camp. It's easy to come up to speed on the Mac, but once you're proficient, the amount of clicking to perform simple actions is excessive. There are far too many cascades of menus for my taste. The ease of use gets in the way of quick results. Such is not the case with ColdFusion. The more you use it, the more you appreciate how well the simple solution scales to difficult tasks. In addition, as I have already shown, the feature set is far greater than that of any competing technology.

Scalability has been the one cause of hesitation for potential customers. I cannot test it in this regard. But I can see for myself that half.com, a site just acquired by eBay, uses ColdFusion. And Macromedia tells me that Pepsi, Schlumberger and other Fortune 250 use it for Web sites and intranets. I suspect those companies recognize they have a fine product on their hands. ■

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### MIDDLEWARE WATCH



ANDREW  
BINSTOCK

## TO DREAM THE IMPOSSIBLE DREAM

"Hah!" my friend said with a derisive laugh, "like that'll ever happen." I'd been talking with a friend about his work when the conversation made its way around to his latest development problems. This one, a major rework of the company's e-commerce pages, had come from someone on his sales staff.

The fact that the improvements the sales guy had requested were from somewhere out in left field and, of course, were needed yesterday really put the icing on this one. My friend was telling me what he'd told the sales guy. The sales guy, meanwhile, was apparently having trouble grasping the concept of "no."

I mentioned to my friend how much things had changed. A year ago, I noted, the answer would have been simply to ask how soon it was needed, and then to take last year's unlimited funding and spend it on enough resources to make something happen in the required time frame. The fact that the requested changes would be both nonfunctional and ludicrous was perfectly acceptable at that time. After all, it was just money.

Now, it's not just money. I called another friend, this one managing development at a company I'd worked for long ago, in another life. "Right," he said. "They just made me lay off my development staff. So of course they'd want something developed." He said that something

like that had happened recently, and all he'd done was to ask the marketing VP who'd made the promise for the project to rehire the staff they'd just laid off. That didn't happen, of course.

Another friend, this one in embedded systems, told me that she'd had no luck just saying no, so she explained that the product wouldn't be up to the quality that the client demanded. She tried saying no again. Eventually, the CEO forced her to have her team develop the product to meet impossible requirements in an impossibly short time frame. The product didn't work. The client rejected it.

A year ago, none of this would have happened. There never would have been any question about hiring enough people to meet any time frame. Clients would have been happy to get a product, even if it didn't work. Everyone was on such a roll that the whole process of expectations and products had become warped. The result was products of dubious quality, financial decisions that were made using wishful thinking instead of facts, and result measurements that had no bearing on any reality that can be perceived from the space-time continuum that we inhabit.

That was then. Now, development managers live in a different world.

Those that still have jobs may not have employees. Of those that have employees, many may be contractors. Some will have access only to contract developers. Getting staff has gone from being difficult to being impossible, not because they are harder to find, but because there's no longer any funding for staff.

Unfortunately, in many companies, the sales and marketing people haven't found out about the changes (or more likely haven't paid attention). The result is that the requests for the development staff continue, but the staff isn't able to respond. Worse, with fewer people to filter out the absurdities, the development staff is now battling the flavor of the month in a variety of trends because there's no longer anyone to tell the sales guys that they can't always have the one cool thing they really believe they want this week.

So how do development managers handle the last-minute requests for the latest pop-up ad technology, or the newest surreptitious means of gaining customers' personal information, say by interrogating their Web browser? They're saying "no."

And lately, it's a firm negative. It's not an effort to compromise, not an attempt to wheedle more employees out of someone else's project. It's just "no."

The reason that development managers seem to be moving to such hardened positions is that they've been taken

to task for trying to satisfy those same requests even when they were impossible. They lost staffs because they were losing out politically, and the reason they did that was because they promised to try to deliver on the last lame idea that came out of sales and had to be turned around in a week. The belief is that if you're going to get shot down in staff meetings, you might as well be able to defend yourself with a few projects done with excellence rather than lots of projects that crashed and burned.

So what happens when the people these managers say "no" to gang up on them, trying to extract a political price? "Who cares?" one friend said, after describing a staff meeting in which he carefully pointed out that the sales VP had shown no evidence of any sales ability at all. "They'll probably fire me, but at least I'll get severance. It's in my contract."

My friend in embedded systems had similar feelings. "I don't want to go through that," she said. "I'll quit first."

And what will happen when these companies decide they need something developed that really is necessary? "Let the sales people develop it," my friend said. One wonders how these companies will remain competitive after stripping their development staffs, when all that's left to develop the products are the staffs of sales and marketing. ■

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### WEB WATCH



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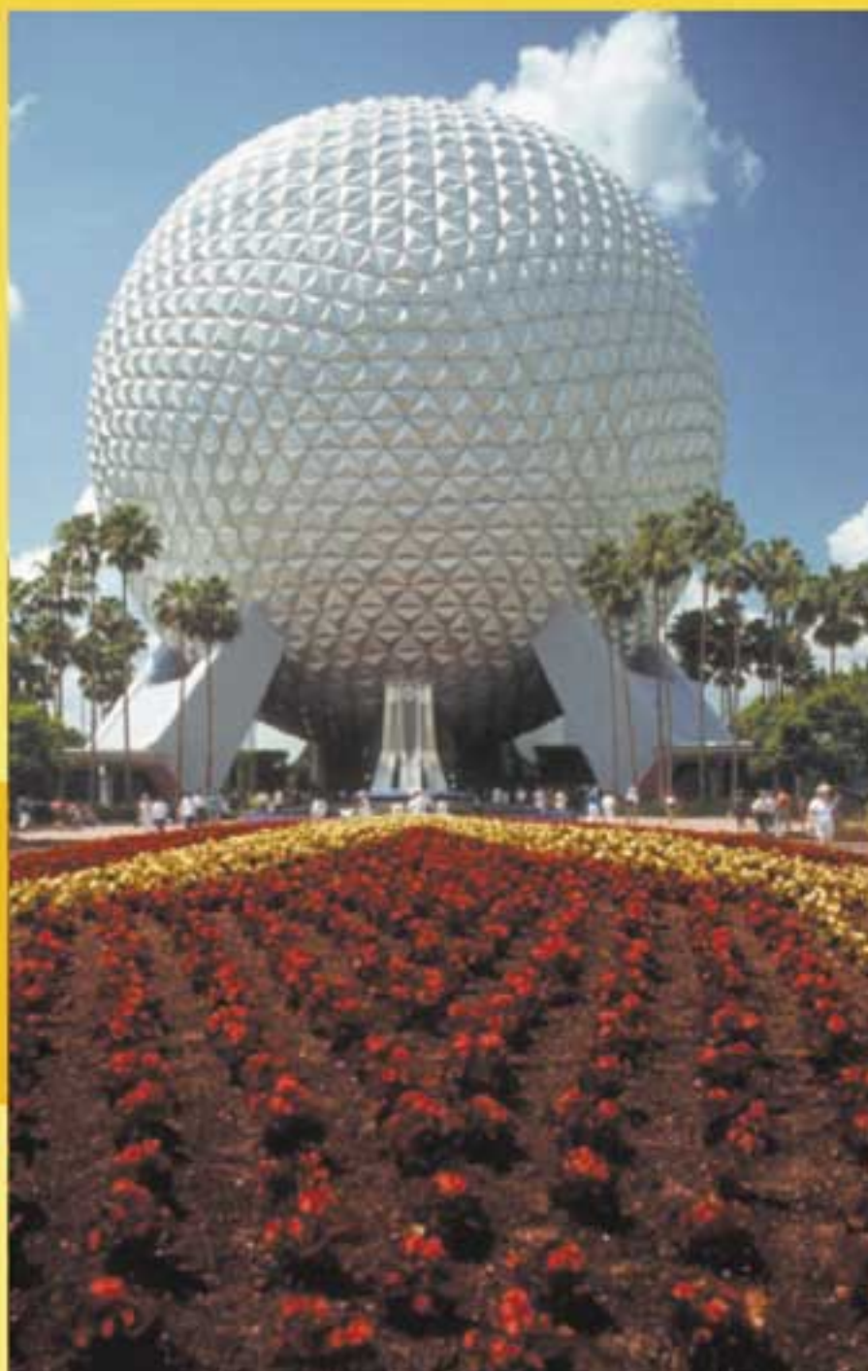
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## CHANGE IS GOOD IN MSXML 4.0

Safe in the confines of my home office, I'm often removed from the visceral evidence of change as perceived by many in the "real world." Change can be good or bad. Change can be gradual, like aging, or sudden, like having a job one minute and not having it the next. Change can be rewarding, or change can be stressful, like when you find out that Microsoft removed version-independent ProgIDs from MSXML 4.0, which you've been merrily using to build code since April.

Fortunately, Microsoft has made the fix for this fairly simple, though it involves running a couple of DLLs that point your April ProgIDs at MSXML 3.0. Worse, you need to be sure to run these DLLs before installing the new (July) release of MSXML 4.0 or your change will once again bite you on the posterior.

On the upside, the new release of Redmond's XML parser does seem to bring more welcome changes than unwelcome. For one, you now get XML validation with either SAX or DOM (though the latter requires using the schemaLocation attribute). Microsoft also claims that the new XSLT engine is substantially faster, quoting numbers like x4-x8, though I haven't confirmed any of that with personal testing. This performance boost is also carried over to the SAX parser, and this, in turn, lends itself out to DOM as well

by using the NewParser property.

Now we all ask the same question we always ask about a new Microsoft release: What's the downside? Frankly, this time it's mixed. It boils down to Redmond making a concerted effort to remove older, "dangling" XML technology and replace it with a single and consistent parsing product, MSXML 4.0. What you're losing is the ability to rely on older, and what Microsoft deems to be "nonconforming," technologies, which include things like UUID namespaces for XDR, XSL reliant on XSLPattern, XmlParser and more.

To its credit, Microsoft has made every effort to replace these older technologies with their "standard" equivalents: HTTP namespaces for XDR, XSLT 1.0, XPath, etc. This is good, though it does leave applications built on dangling technology...well, dangling. Fortunately, Microsoft has tried to address this problem as well by adding what it calls "side-by-side" functionality. All that means is that should your applications require it (as in the ProgID example), MSXML 4.0 has been specifically designed to work easily with older or future versions of this same engine. Of course, this isn't without change either, as it required not only the removal of ver-

sion-independent ProgIDs, but also the removal of replace mode.

This effect is felt even more deeply for Windows XP developers as this operating system is designed to enable applications to safely share assemblies. Installing MSXML 4.0 on Windows XP means that the software gets installed as a shared side-by-side assembly. This type of side-by-side, however, is significantly different from previous side-by-side scenarios with MSXML. Previously, side-by-side was managed via flexible GUIDs and ProgIDs. That's gone and Windows XP replaces it by using objects from various versions and identifying those with ProgIDs and GUIDs.

In Windows XP, side-by-side assemblies can exist, a feature offered specifically so that multiple versions of the assembly can run simultaneously without colliding with one another. While such assemblies are not registered globally, they are always available to any application that carries a dependency for the assembly. Such dependencies are specified with manifests, of which there are two kinds: an assembly manifest and an application manifest.

An assembly manifest boils down to an XML file that simply describes the side-by-side assembly, covering all basic information including names and version numbers as well as related files and resources. But it also has to

describe any dependencies that this assembly may have on other assemblies. Moving further away from the way things have been done in the past, the assembly manifest also must carry activation and binding data, like type libraries or COM classes. An assembly manifest must always accompany an assembly under Windows XP for the assembly to function properly.

The second type of manifest is an application manifest. Similar to its cousin, the application manifest simply records the names and versions of any assemblies that the application must bind to at runtime. Application manifests are really just information files that are linked to specific applications—usually, they're even stored in the same folder as the app executable.

Once again we return to change. Yes, this certainly throws in a few wrenches if your work has been heavy on MSXML for the past few months. But on the upside, standardizing on technology that's being accepted in the industry (like XSLT and XPath) is definitely a good thing. On the Windows XP side, I don't like having to get used to a new operating system architecture any more than anyone else, but it's not really a surprise. Not to mention that once that hurdle is past, Windows XP offers some interesting possibilities. ■

*Oliver Rist is vice president of product development for rCASH in the REALM. Reach him at orist@mindspring.com.*

## COPING WITH WINDOWS' MISSING JVM

Isn't it ironic? The courts nail Microsoft for incorporating an Internet browser into the operating system. Developers spit at Microsoft for adding everything from a decent file manager to Windows 95 to instant messaging and multimedia players into Windows XP. And now, many in the industry are up in arms because Microsoft is *not* incorporating Java into Windows XP. I'm no Microsoft fan, but some days the boys from Redmond really can't win no matter what they do.

Yet, no matter how Microsoft spins it, not including a JVM in Windows XP is a short-term mistake. It's not like Microsoft has a .NET rabbit in its hat ready to replace Java. It doesn't. C# may, like Java, abstract away input/output and networking operations, but I can barely step out of my network neighborhood into the Internet and not stumble over Java-based Web pages and applications. C#? I know Java, and C# is no Java. Microsoft's long-term plan is, of course, to bury client-side Java under .NET.

How do we prevent that from happening? Clay Shirky, a pundit and partner at Accelerator Group, thinks that the answer is to encourage PC vendors to include a JVM with every machine.

That's an excellent idea, and you should push it as hard as you can.

Sun should get behind this effort. Sun and some developers have been lackadaisical about client-side Java for much too long, because yes, the big money from Java is on server-side projects. But, ignoring the desktop is a bad idea. It's on the desktop that people form their first opinions about software. Remember how Windows NT server became popular in large part because people already knew desktop Windows. If Java isn't on the desktop, it could end up an also-ran like NetWare did.

You could always attempt to get Java to play nicely with .NET using Simple Object Access Protocol (SOAP), but I'm not sure that's a good idea. Don't get me wrong, Sun's JAX package, which added XML APIs and architecture to Java, was a great, indeed an essential, idea to move Java forward. Java and XML go together like a hand in a glove. But, if you spend your programmers' hours on getting Java to work with .NET via SOAP, you might be better off just going ahead and moving to C#. Companies that program with non-Microsoft tools to Microsoft's constantly changing standards

have a bad way of going out of business.

Besides, it's not like we'd be asking OEMs to go to that much trouble to add Java compatibility. Vendors must use the Internet Explorer Administrator Kit (IEAK) to install the JVM. Two companies, Compaq and Dell, are already following this course. And, surely HP, which announced its own Java development framework and API, Core Services Framework (CSF), at JavaOne, can be counted on to include a JVM in its PCs.

In theory, you can upgrade an existing Windows system with a Microsoft JVM to Windows XP, and IE-XP will use the JVM without dropping a byte. Windows XP, of course, is only in beta, but I haven't managed to get the upgrade path to work yet. So, at this early stage, I wouldn't count on the Microsoft JVM surviving a Windows XP upgrade experience.

Yes, Windows XP users could always download a JVM, but anything that gets in a user's way is a bad thing. Users will put up with a 5MB download for a new song; they won't put up with downloading 5MB worth of JVM to view a page that worked just fine with previous versions of Windows. Instead, they'll blame the page's owner, who may very well turn around and blame you for the "problem" page.

But now the question is: Which JVM? The last thing any of us needs is for OEMs to include different, and ever so slightly incompatible, JVMs on their boxes.

Take Kaffe, for example. It's a decent open-source JVM, but if your applet uses modern Sun class libraries you can expect to see Kaffe spill code all over the machine. As Kaffe's own people say on its Web page ([www.kaffe.org](http://www.kaffe.org)), "Kaffe mostly complies with JDK 1.1." Mostly is fine for programmers, but it's rotten for users.

Of course, the *real* solution would be to standardize and unite Java so we wouldn't have this problem, but let's stay real, shall we?

So what does it all mean? Well, for one thing, I think Microsoft's move will backfire. I suspect all the important OEMs will standardize on either Sun's J2SE 1.3.1 or 1.4. As a result, Sun will finally get its own foot in the PC vendors' doors. And, that may be the edge Sun needs to get Open Net Environment (ONE) to be taken as seriously as Microsoft's .NET and to keep Java alive on the desktop. ■

*Steven J. Vaughan-Nichols has been writing about technology for more than 15 years and also has worked as a programmer for NASA and the Dept. of Defense. Reach him at [sjvn@vna1.com](mailto:sjvn@vna1.com).*

### WINDOWS WATCH



OLIVER RIST

### JAVA WATCH



STEVEN J. VAUGHAN-NICHOLS





The Component Vendor Consortium (CVC) is a non-profit organization committed to ensuring developers have access to well-written, thoroughly tested components that can be implemented without difficulty. To help you choose



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Sax Software,  
SoftArtisans,  
VisualSoft Technologies Limited.



# JDJEdge Offers Accelerated Java and Web Services Training

BY CHRISTINA M. PURPI

JDJEdge, the first developers' conference hosted by SYS-CON Media Inc. without Camelot Communications Corp. as its partner, will offer seven "fast

tracks" to provide attendees with skills to prepare for developer certification programs for Cold Fusion, WebSphere, WebLogic, Oracle 9i and Java programming, archi-

ture and component development.

Eight keynote speakers will address the conference, which focuses on Java. The two opening keynotes will be given by Sun Microsystems Inc.'s chief scientist, James Gosling, and Alan E. Baratz, CEO of Zaplet Inc.

A panel discussion titled "Web Services Paradigm," with Rick Ross, founder and president of advocacy group Java Lobby, as the moderator, will be held on Tuesday at 9:15 a.m. The conference also will offer more than 150 technical sessions, including such courses as "Writing Real Java, Not Just C in Java" and "Simplifying Complex Multiplatform Software Deployment."

Presented at the show will be the Java Developers Journal's annual readers' choice awards, which recognize the products chosen by the magazine's readers. ■



## CONFERENCE:

Sept. 23-26  
Hilton New York

## CONFERENCE HOURS:

**Sunday**, 9 a.m.-5 p.m.  
**Monday**, 8:45 a.m.-8 p.m.  
**Tuesday**, 8 a.m.-7:30 p.m.  
**Wednesday**, 8:30 a.m.-5 p.m.

## EXHIBIT HOURS:

**Tuesday**, Noon-6 p.m.  
**Wednesday**, 11:30 a.m.-5 p.m.

## KEYNOTE SPEAKERS:

**Monday**  
10:15 a.m., James Gosling, chief scientist, Sun Microsystems Inc.

[www.sys-con.com/jdjedge](http://www.sys-con.com/jdjedge)

2:30 p.m., Alan E. Baratz, CEO, Zaplet Inc.

## Tuesday

9:15 a.m., David A. Litwack, CEO, SilverStream Software Inc.  
9:15 a.m., Greg Kiessling, co-founder and CEO, Sitraka Inc.  
9:15 a.m., Rick Ross, president, Java Lobby  
1:30 p.m., Kevin Lynch, president, products, Macromedia Inc.

## Wednesday

9:45 a.m., Scott Diezen, CTO, e-commerce server division, BEA Systems Inc.  
1:30 p.m., Bruce Scott, president and CEO, PointBase Inc.

## News Briefs

### MORE PRODUCTS

← continued from page 8

available for download at [www.idautomation.com/java](http://www.idautomation.com/java). Single-server licenses for the Barcode Packages start at \$199, and royalty-free site licenses start at \$790.

### PEOPLE

**Anthony R. Ferrara** has joined Infragistics Inc. as director of professional services, where he will grow the company's e-business strategies and methodologies. He was formerly director of CRM consulting at IntelliCorp . . . Kinecta Corp. has named **Mike Barone** as its new vice president of worldwide sales, reporting directly to CEO **Peter Micciche**. He is the former vice president of global accounts for ChannelPoint Inc. . . . NeuVis Software Inc. has named **Tom Baehr** as vice president of sales. He was formerly sales vice president at New Era of Networks Inc. . . . **Eric Schmidt**, who had been named chairman of search-engine provider Google Inc. in March, now adds the title of CEO. Schmidt, who remains chairman of Novell Inc., replaces Google founding CEO **Larry Page**, who now takes the position of president.

### STANDARDS

The HR-XML Consortium has formed the Time Reporting Workgroup to create the **Time Reporting Protocol**, an XML-based data transfer between payroll and HR systems . . . ECMA has formed a new task force, TC32-TG18 Internet Content Adaptation, that will cooperate with its iCAP Forum to create standards for an **Internet Content Adaptation Protocol** (ICAP) . . . The Alliance for Telecommunications Industry Solutions' TIM1 Technical Subcommittee has completed the initial stages of formulating a standard called **tML**, telecommunications Markup Language, which will provide support for DSL service provisioning and OSS interconnection. ■

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## BRIDGING THE BUSINESS-IT CHASM

As software vendors push to sell products in large development shops, they increasingly tout one particular phrase as an advantage: "Even non-programmers can use our software." Why they think this is advantageous escapes me; isn't it the trained developers who are purchasing these products, recommending their purchase and ultimately using them?

The argument is that with IT resources growing more scarce, flexibility is heightened and response times shortened when more people in an organization, including the proverbial "business analysts" that these tools makers invariably mention, can make modifications to applications to reflect changes in business logic or user profiles. Not to mention the claims of reduced costs and eased burden on already overtaxed developers.

Businesses, meanwhile, are said by vendors to be taking back their operations from programmers. Midlevel managers pressured from above to achieve certain business objectives via software suddenly are said to want to get their hands on the applications (again, I'm not sure why; it's not their job!) to ensure the apps are optimized to the underlying business logic.

One way software vendors are solving this problem of their own creation is by offering automatic code-generation tools that significantly reduce human intervention. While developers will never truly be eradicated from the corners and cabinets of the business world, the increased availability of tools

that write code from models, or generate code in one language from another automatically, has created some cause for concern among software developers. Already, some companies claim to offer code-generation products that can create up to 70 percent or 80 percent of the plumbing code, freeing up developers to work on the more esoteric coding issues—but reducing their role nonetheless.

### INDUSTRY WATCH



DAVID RUBINSTEIN

Taking a unique approach to this dilemma is Bowstreet, which claims that its new Business Web Factory 4 application assembly environment lets developers create parametric models of Web applications that can be modified by nontechnical people simply by changing profiles.

Bowstreet, as do many others, envisions a world of Web services, created in component-based development architectures. But Bowstreet takes what it calls a late-binding approach to assembling applications that allows for a high degree of customization and optimization of the apps, according to director of marketing Steve Chazin.

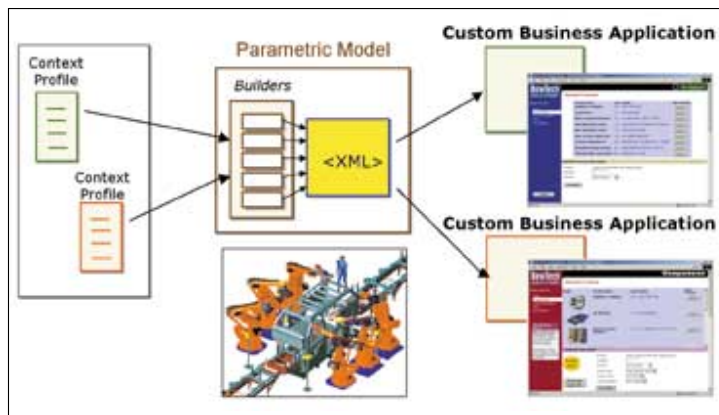
Web Factory includes a designer tool that plugs into Borland's JBuilder devel-

opment environment. It is here that developers create the parametric models from which on-the-fly applications will spawn. When a user knocks on the door of a Web site powered by Bowstreet, that user's stored profile is fed into a model as inputs. From there, the parameters are fed as inputs into proprietary "builders," the output from which is built in a regeneration engine as an application and deployed to BEA's WebLogic—the only J2EE app server supported at this time—to run the application.

"Think of builders like robots on a factory floor, and the regeneration engine as the assembly line," Chazin said. "In the Web services space, we're one of the first to extend object-oriented programming on the Web. Most folks are using Web services in the design cycle as something they don't have to build into the application, but we take a late-binding approach that allows the application to take advantage of a whole host of services."

One of Bowstreet's maxims is that it wants to do for application assembly what spreadsheets did for computer calculating. "The profiles are like cells in a spreadsheet," said Andy Ellicott, product marketing manager. "Business managers create changes to profiles"—there's that bonus again—"or create new ones, and the applications change. The costs of customizing and maintaining applications is 80 percent less with Web Factory."

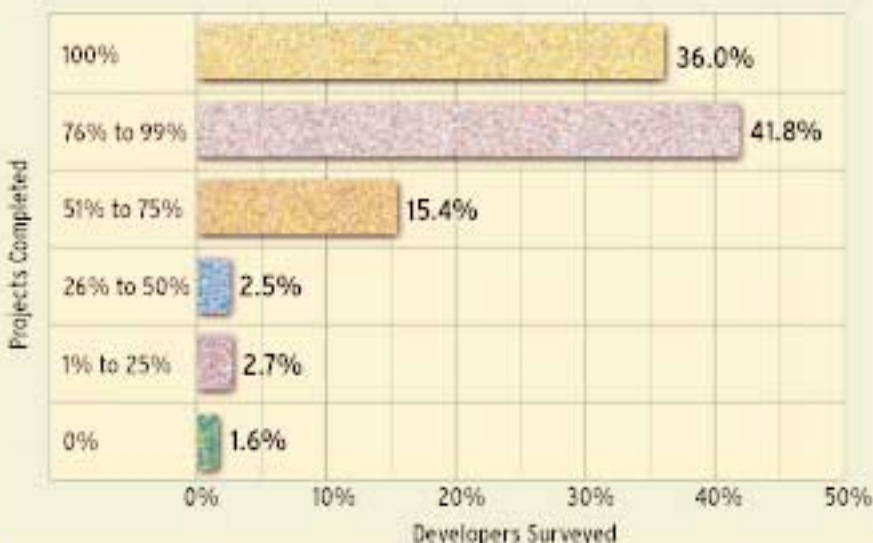
But so long as Java developers are required to create the parametric models—which, according to Chazin, have been in use in the CAM/CAD world for years—they will not go the way of tails on humans. ■



Once developers have created the models, nontechnical workers can customize the applications simply by changing the profiles.

David Rubinstein is executive editor of SD Times.

## What Percentage of Embedded Projects Are Completed?



### EVANS DATA WATCH

Embedded development projects have a high completion rate, according to a survey of 500 developers concluded in June. More than one-third of all embedded developers queried responded that all of their projects were completed, while more than 90 percent of the developers indicated successful completion at least half the time. One must wonder about the 1.6 percent of developers who replied that none of their projects are ever completed.

Among the reasons given for embedded projects failures were the need to improve the development process of embedded projects and the need for improved tools.

Embedded Systems Developer Survey  
Summer 2001 Evans Data Corp.  
www.evansdata.com

## BUSINESS BRIEFS

**RSA Security Inc.**, an e-business security provider, will acquire **Securant Technologies Inc.** in a deal valued at \$136.5 million. Securant sells the ClearTrust authorization tool, which controls what users can see or do on a Web site once they have been authenticated. RSA expects the deal to add approximately \$35 million to its revenue next year . . . **Be Inc.**, which has agreed to sell its software assets and intellectual property to **Palm Inc.**, has eliminated 28 jobs, or 33 percent of its work force, from its now-disbanded sales and marketing departments. Be's remaining jobs exist in the area of product development. Be has been trading at less than \$1 per share since April, after hitting a high of more than \$35 per share in December 1999 . . . **Corel Corp.** will acquire the assets of **SoftQuad Software Ltd.** in a \$36 million all-stock transaction. With the acquisition, Corel plans to enhance XML capabilities within its WordPerfect product line for the creation of XML content for the Web. The deal is expected to close in the fourth quarter.



### CALENDAR OF EVENTS

**Embedded Systems Conference** Sept. 4-7  
Boston, CMP MEDIA LLC  
[www.esconline.com/boston](http://www.esconline.com/boston)

**Enterprise Web & Corporate Portal Conference & Expo** Sept. 5-6  
Santa Clara, Calif.  
INTERMEDIA GROUP INC.  
[www.intmedgrp.com/eweb](http://www.intmedgrp.com/eweb)

**CTIA Wireless I.T. & Internet 2001** Sept. 11-13  
San Diego, CTIA  
[www.wirelessit.com/general](http://www.wirelessit.com/general)

**JDJEdge Conference & Expo** Sept. 23-26  
New York, SYS-CON MEDIA INC.  
[www.sys-con.com/jdjedge](http://www.sys-con.com/jdjedge)

**XML One & Web Services One** Sept. 30-Oct. 4  
San Jose, Calif.  
101 COMMUNICATIONS LLC  
[www.xmlconference.com/sanjose](http://www.xmlconference.com/sanjose)

**Communications Design Conference** Oct. 1-4  
San Jose, Calif., CMP MEDIA LLC  
[www.commdesignconference.com](http://www.commdesignconference.com)

**Embedded Linux Expo & Conference** Oct. 9  
Boston, RTC GROUP  
[www.rtcgroup.com/elinuxexpo/boston](http://www.rtcgroup.com/elinuxexpo/boston)

**Electronic Commerce World Conference & Exhibit** Oct. 9-12  
Chicago  
ELECTRONIC COMMERCE WORLD MAGAZINE  
[www.ecmediagroup.com/confer/ecwchi/index.cfm](http://www.ecmediagroup.com/confer/ecwchi/index.cfm)

**VS Live** Oct. 9-14  
Orlando, Fla.  
FAWCETTE TECHNICAL PUBLICATIONS INC.  
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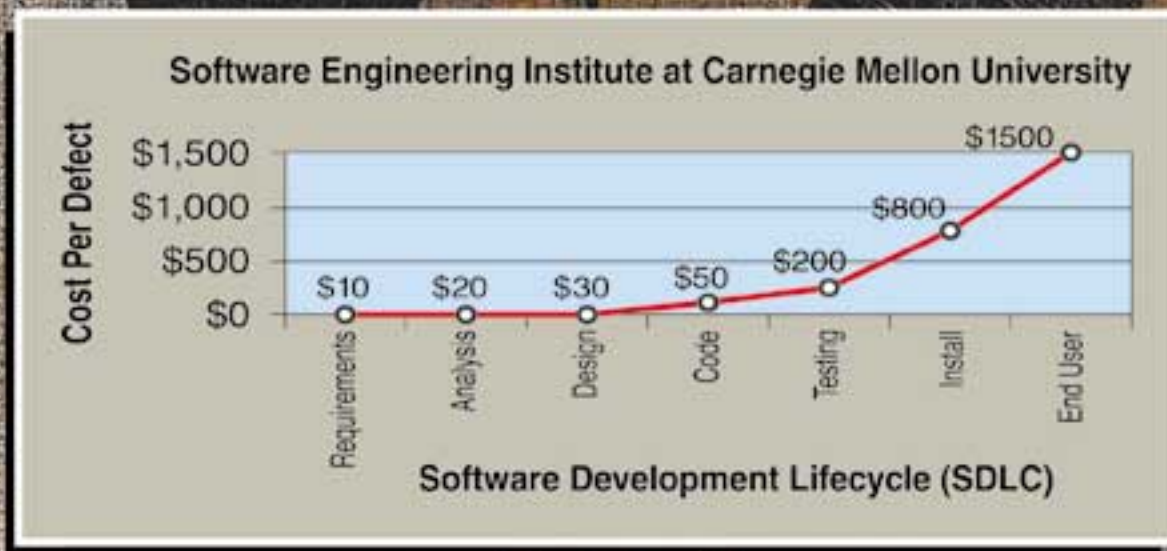
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